PIM in IVI

Contacts, your phone, your car

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Head Unit as a Better UI for Multiple Phones

- Fast caller ID lookup for incoming call (not the same as text phone number search!), local photo data
- Look up a contact via searching or browsing and initiate a phone call
- Find address and start navigation
- Manage data from more than one phone: driver and passenger
- Unified address book: no duplicates, merge data from all available sources; may include dynamic information (online presence)

Connected car

- **Direct synchronization with cloud services:**
  - Google Contacts
  - iCloud
  - Enterprise (= Exchange)

The GNOME PIM Stack for Tizen IVI: Overview

- **Evolution Data Server: store contacts in sqlite**
- **libphonenumber: parsing and normalization of phone numbers**
- **folks: unified address book in memory**
- **SyncEvolution:**
  - Phone and cloud syncing
  - Hosts the unified address book
  - “IVI PIM Manager” D-Bus API
- **Bluez obexd: Phone Book Access Protocol**

Overview, cnt.

- LGPL 2.1 or more liberal
- Minimal additional dependencies (no GTK):
  ICU, glib, sqlite, vala, libgee, libsecret, libgcr, protobuf, gtest;
  optionally for cloud sync also neon + gSSO
- Locale aware:
  - Phone number parsing
  - Sorting, special case Pinyin (transliterate, then mix with Western names)
  - Support systemd localed for dynamic change of locale

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IVI Features in the GNOME-based Stack

Evolution Data Server: “Per-device access”
One address book per phone

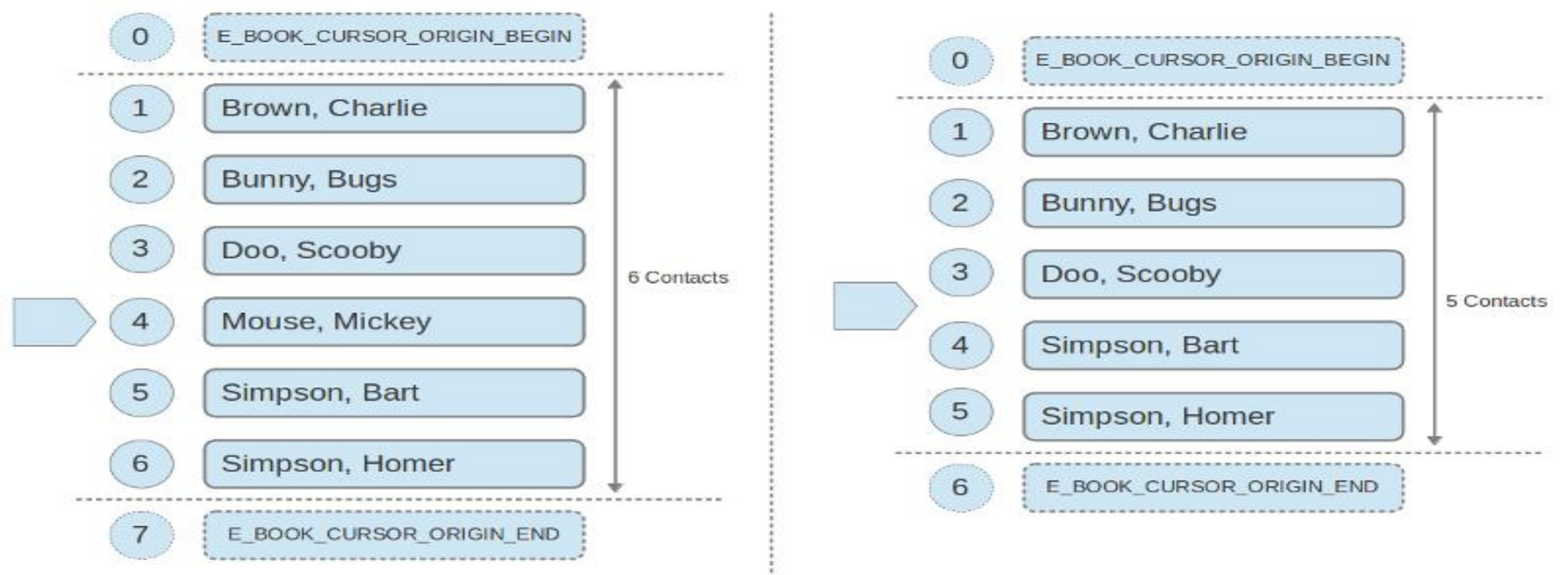
Traditional EDS:

- **Abstract API, framework, storage provided by specific backends**
- **File backend: Berkley DB + sqlite index**

Enhanced EDS (3.6 and later plus Openismus patches, almost all included in 3.10):

- **All string data in sqlite, configurable indices to reflect searches made by UI**
- **Photos as separate files, managed by EDS**
- **Normalize phone numbers with libphonenumber:**
  find “089-1234” when looking for “+49891234”
- **Regular expression support for fuzzy phone number search and keypad search**
- **Writing in EDS daemon, reading in clients:**
  same API, just different open method
- **Efficient browsing through all or some contacts:**
  sorted results, cursor marks current position, reading only returns next *n* contacts
- **Locale-aware alphabetic index**

Evolution Data Server: Cursor



0 E_BOOK_CURSOR_ORIGIN_BEGIN

1 Brown, Charlie

2 Bunny, Bugs

3 Doo, Scooby

4 Mouse, Mickey

5 Simpson, Bart

6 Simpson, Homer

7 E_BOOK_CURSOR_ORIGIN_END

6 Contacts

Cursor points to Mickey Mouse, the cursor position is now 4 out of a total of 6 contacts.

0 E_BOOK_CURSOR_ORIGIN_BEGIN

1 Brown, Charlie

2 Bunny, Bugs

3 Doo, Scooby

4 Simpson, Bart

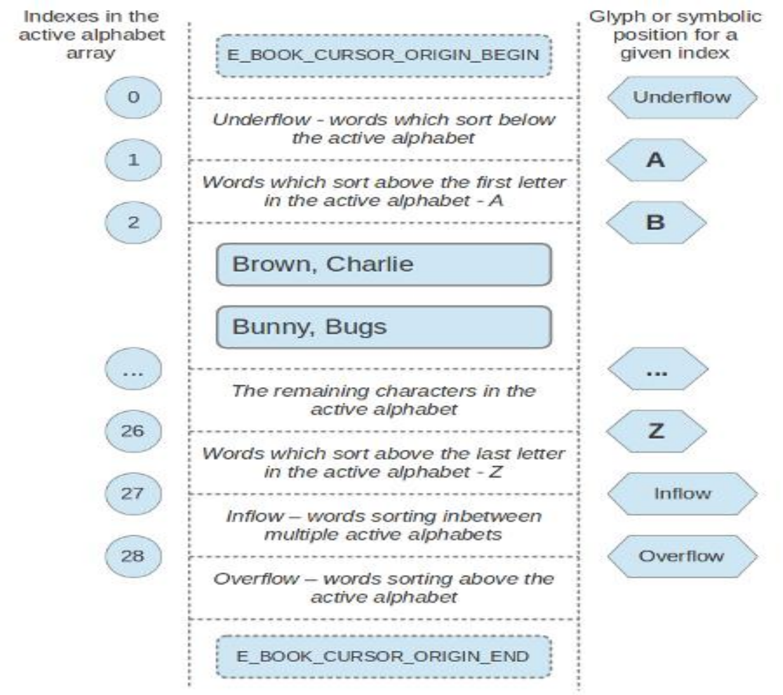
5 Simpson, Homer

6 E_BOOK_CURSOR_ORIGIN_END

5 Contacts

After deleting Mickey Mouse, the cursor still points to Mickey Mouse but now the calculated position and total have changed.

Evolution Data Server: Alphabetic Index



Indexes in the active alphabet array		Glyph or symbolic position for a given index
	E_BOOK_CURSOR_ORIGIN_BEGIN	
0	*Underflow - words which sort below the active alphabet*	Underflow
1	*Words which sort above the first letter in the active alphabet - A*	A
2	Brown, Charlie Bunny, Bugs	B
...	*The remaining characters in the active alphabet*	...
26	*Words which sort above the last letter in the active alphabet - Z*	Z
27	*Inflow – words sorting inbetween multiple active alphabets*	Inflow
28	*Overflow – words sorting above the active alphabet*	Overflow
	E_BOOK_CURSOR_ORIGIN_END	

SyncEvolution + folks: “Unified address book”

- Configurable set of enabled address books
- No disk writes when reconfiguring
- Might include transient information (presence status)

➢ Kept in memory

- Sorting, searching, fast caller ID lookup

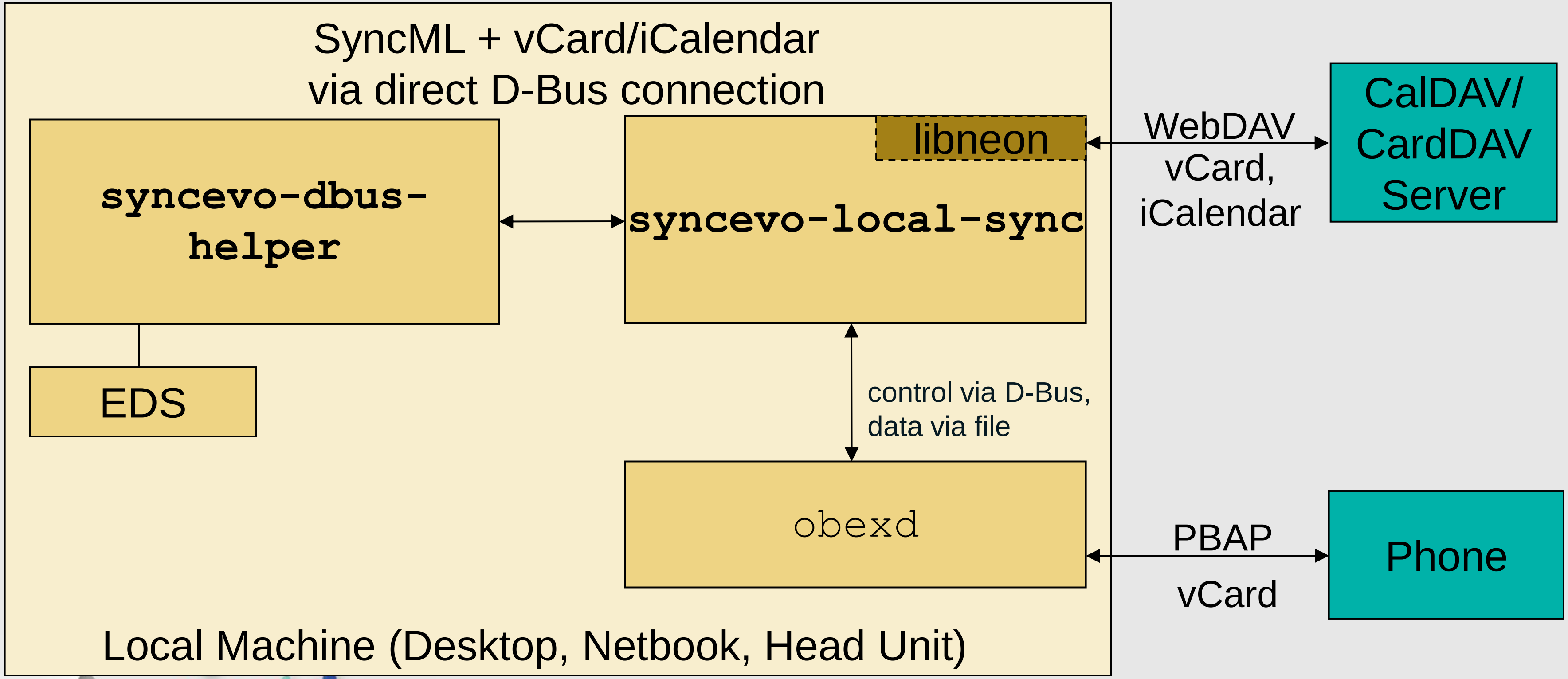
➢ Model/view/controller principle for results

SyncEvolution + obexd: PBAP syncing

- **Take full dump of phone address book, detect changes and apply them to local cache**
- **No writes (logs, DB, sync meta data) if nothing changed on phone**
- **Incremental syncing:**
  - First (or only) text: must not modify local photos
  - Then everything: must add/update/remove local photos
- **Overlap download and processing**

➢ **Goal is to finish sync shortly after finishing PBAP download (“processing at wire(less) speed”)**

PBAP + CalDAV/CardDAV Sync



Getting Started

Installation

- **Core PIM Stack:**

```
#  zypper install syncevolution-ebook \
                  evolution-data-server
```

- **PBAP:**

```
#  zypper install obexd bluez-test syncevolution-pbap
```

- **CardDAV:**

```
#  zypper install signond gsignond-plugin-oauth \
                  signonui-efl \
                  libgsignon-glib-devel \
                  syncevolution-dav
   # signonui-efl might not be available yet (TINF-588)
```

- **PIM API examples:**

```
#  zypper syncevolution-test
```

PBAP Contact Caching

- **Run as normal user in a regular user session (session D-Bus is needed)**
- **Pair a phone:**

```
$  bluetoothctl
[bluetooth]# power on
[bluetooth]# scan on
[bluetooth]# pair A0:4E:04:1E:AD:30
```

- **Configure and cache address book:**

```
$  /usr/lib/syncevolution/test/sync.py \
       --bt-mac=A0:4E:04:1E:AD:30 \
       --configure \
       --progress --sync
```

Accessing Contacts

- **PBAP:**

```
$  syncevolution --export -- \
                     backend=pbap database=bt-obex://A0:4E:04:1E:AD:30
```

- **EDS:**

```
$   syncevolution [--print-databases|
                      --print-items|--export -|--import <file>] \
                     backend=evolution-contacts [database=<DB name>]
```

- **Unified address book:**

```
$   /usr/lib/syncevolution/test/search.py \
         -a ’’ -a peer-a04e041ead30 \
         --search ’[]’ \
         --read-all
```

Google Contacts Syncing with Username/Password

- Configure and test access to Google Contacts:

```
$   syncevolution --configure username=john.doe@googlemail.com \
          password=foobar \
          sslverifyhost=0 sslverifyserver=0 \
          syncurl=https://www.googleapis.com/.well-known/carddav \
          backend=carddav \
          target-config@google addressbook
    # sslverify*=0 works around PTF-190
$   syncevolution --print-databases target-config@google addressbook
$   syncevolution --export - target-config@google addressbook
```

- Configure and run sync:

```
$   syncevolution --configure --template SyncEvolution_Client \
                  syncURL=local://@google google addressbook
$   syncevolution --sync slow google
```

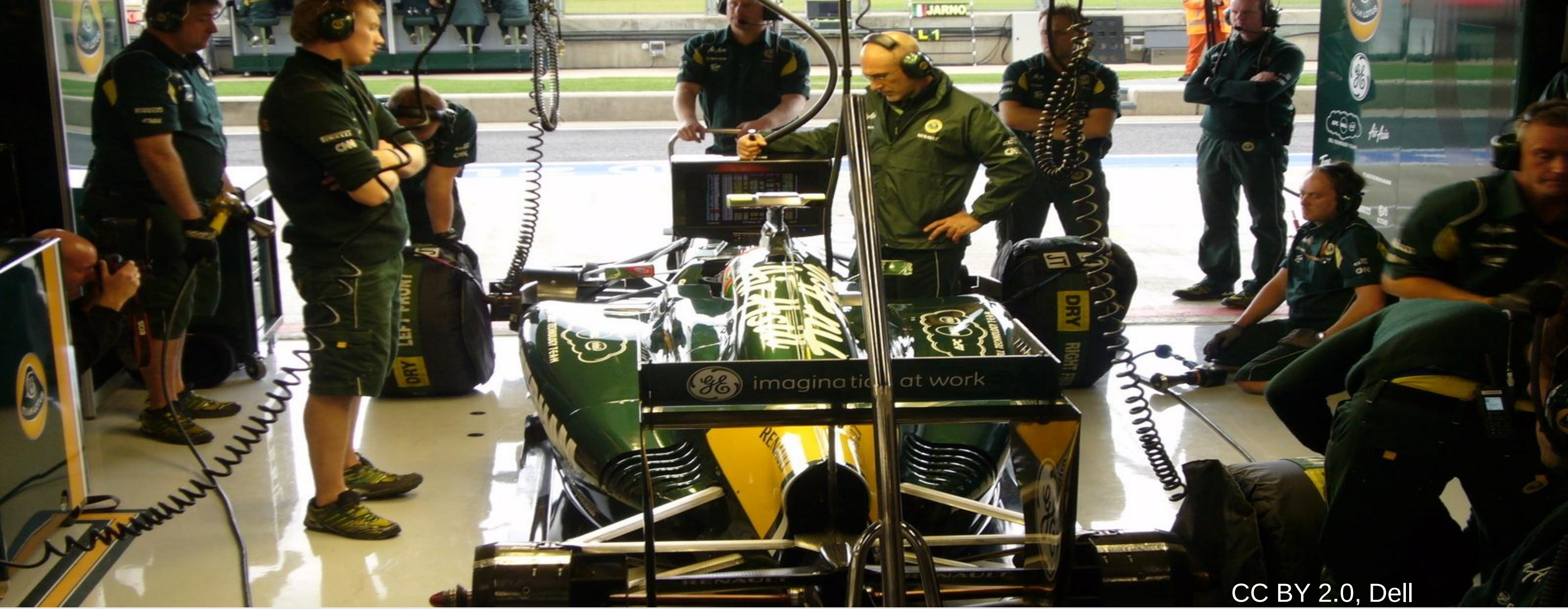
Google Contacts via OAuth2

- **Configure identity in gSSO:**

```
$    gsignond & # D-Bus auto-activation fails at the moment (TINF-588)
$    gsso-example --create-identity=google-for-syncevolution \
           --identity-method=oauth --identity-realms=google.com
$    ID=1
$    for i in /usr/bin/syncevolution /usr/libexec/syncevo-*; do \
         gsso-example --add-context=$ID --system-context=$i --application-context=; \
     done # Depends on gSSO using file-based ACL in Tizen; may change.
```

- **Use username=signon:<parameters> and no password:**

```
$    syncevolution --print-databases \
     "username=signon:{'identity': <uint32 $ID>, 'method': <'oauth'>, 'mechanism': <'oauth2'>,
     'session': <{'TokenHost': <'accounts.google.com'>, 'ForceClientAuthViaRequestBody': <true>,
     'Scope': <'email https://www.googleapis.com/auth/carddav'>, 'UiPolicy': <uint32 0>, 'ClientId':
     <'73652887053-2ciia00v5fseed7s0sudggdu3oaoo2re.apps.googleusercontent.com'>, 'AuthPath':
     <'/o/oauth2/auth'>, 'ResponseType': <'code'>, 'AuthHost': <'accounts.google.com'>,
     'ClientSecret': <'2YDYzyI6HWSJFd5dOqz0uZGj'>, 'Realms': <['google.com']>, 'RedirectUri':
     <'http://localhost'>, 'TokenPath': <'/o/oauth2/token'>}> }" \
     syncurl=https://www.googleapis.com/.well-known/carddav \
     sslverifyhost=0 sslverifyserver=0 \
     backend=carddav
     # ClientSecret/Id are for syncevolution.org – get your own from Google!
```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Getting Involved

Next Steps

- **In development:**
  - PBAP backend enhancements (PBAP 1.3, transfer in chunks)
  - PIM Manager windowed search
- **Ideas for IVI:**
  - Calendar support
  - Transparent access to contacts without caching
- **Needs community help:**
  - KDE
  - GTK UI

References

SyncEvolution:

- https://syncevolution.org
- http://cgit.freedesktop.org/SyncEvolution/syncevolution/tree/src/dbus/server/pim/pim-manager-api.txt
- http://cgit.freedesktop.org/SyncEvolution/syncevolution/tree/src/dbus/server/pim/README
- http://cgit.freedesktop.org/SyncEvolution/syncevolution/tree/src/backends/pbap/README
- http://cgit.freedesktop.org/SyncEvolution/syncevolution/tree/src/backends/webdav/README

Evolution Data Server:

- https://developer.gnome.org/libebook/stable/EBookClient.html

Other projects:

- https://wiki.gnome.org/Folks/
- http://code.google.com/p/libphonenumber/
- http://code.google.com/p/googletest/
- http://code.google.com/p/protobuf/

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