

Cloud4all and GPII: Anywhere Accessibility through Cloud-Based Auto-Personalisation

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Enable accessibility by:

- adapting software to fit the user's needs
 - operating system settings: Windows, Linux GNOME, Android
 - assistive technology (AT) settings: Orca, on-screen keyboard, ...
 - browsers and web applications: Firefox, ...
 - third-party apps, e.g. Mobile Accessibility for Android (Code Factory)

- Delivering AT that fits the user's needs
- Finding alternative versions of content
 - e.g. captioned versions of video
- Adapting embedded systems
 - Ticket vending machines, DTV



"Global Public Inclusive Infrastructure"

- We don't build new AT
- AT and other software
 - gets adapted to connect to GPII
 - can then adapt to the user's settings
- We build the framework to enable this

Contributing Projects



- Led by Raising the Floor International
 - Started by Prof. Gregg Vanderheiden
- Cloud4all (EU-funded, Nov 2011 – Oct 2015)
 - 24 partners, including Trace Center (Wisconsin, US) & IDRC (Toronto, Ca)
- Prosperity4All (EU-funded, Jan 2014 – Jan 2018)
- Fluid & FLOE (Canada)
- Research to Reality (US)
- Preferences for Global Access (US DoE)
- UIITA-RERC (US)



GPII

CLOUD4all

PROSPERITY4all

US Dept of Ed

UIITA-RERC

User Awareness

Users find out something exists for them

Needs & Prefs Discovery Aid

User can find out which types of things help them

Needs & Prefs Storage

Users can store needs & preferences for later use

GPII UL & Marketplace

Find all solutions, AT & mainstream device / feature / service

Shopping Aid

Users can use their profile to find just what helps them

Prefs & Perm Server

User needs & preferences stored securely and available anywhere

Real Time Matching

Prefs and context used to determine best fit, here, now

Delivery / Launch mgmt

Built in + AT are auto adjusted and launched, anywhere

Media & Materials

Auto-augmentation transformation and/or replacement

Assistance on Demand (AOD)

Users can call up any assistance anywhere

Developers' Space

Free & commercial parts to speed dev and lower costs

Consumers & Experts connection

Experts, consumers, testers, etc. to help new developers

Service Creation Tools

To make it easy to create AOD, media & material service

GPII UL & Marketplace

Developers can quickly, efficiently market worldwide

u-Finance u-Payment Inf

Mechanism for Financing R&D and service delivery



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Demo: Adaptations on GNOME

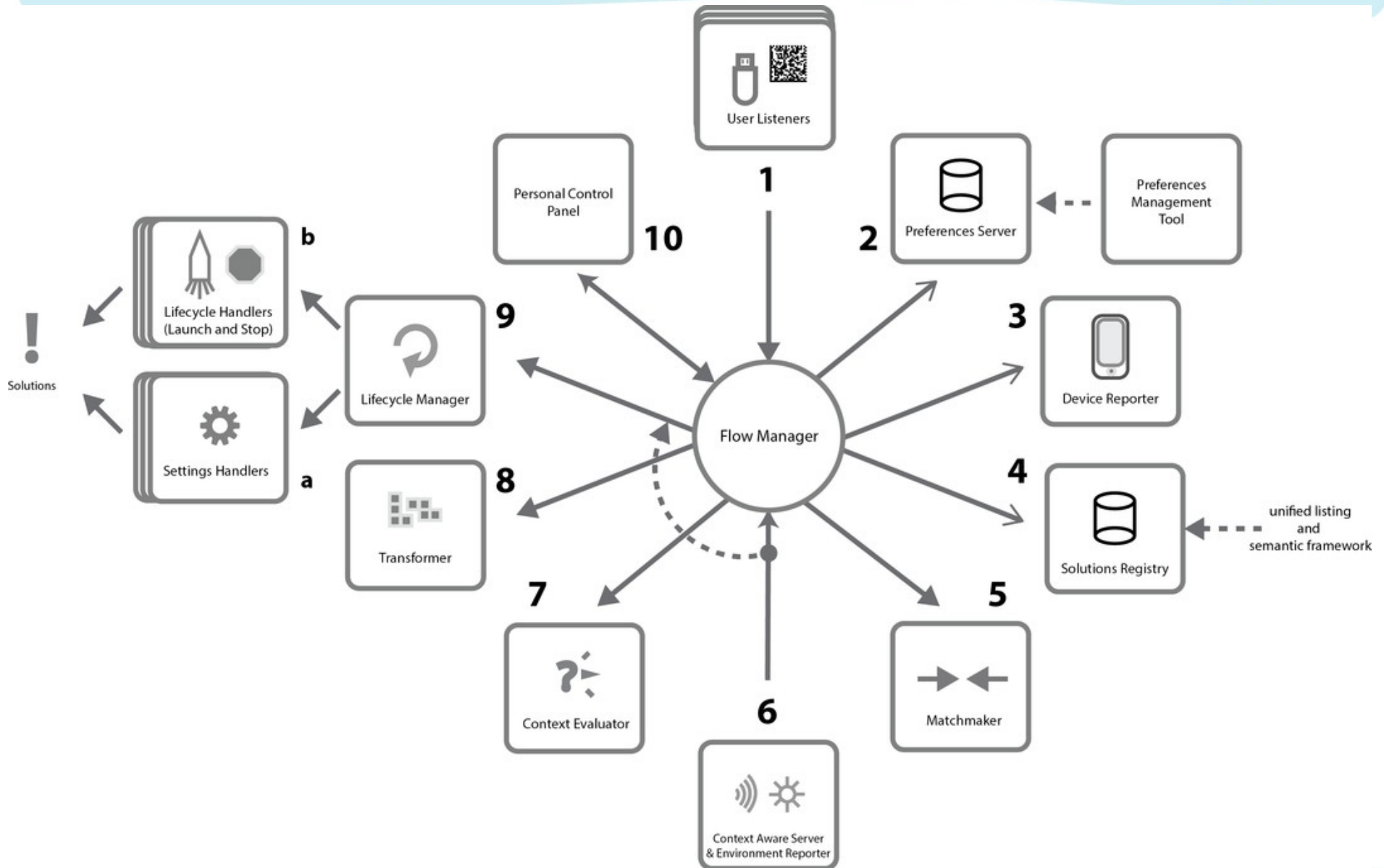


- A set of preferences is created on Windows
- User moves to GNU/Linux with GNOME
- Preferences are used to adapt GNOME
- Sammy (magnification & font scaling):
 - <http://localhost:8081/user/sammy/login>
 - <http://localhost:8081/user/sammy/logout>
- Timothy (high contrast):
 - http://localhost:8081/user/timothy_bw/login
 - http://localhost:8081/user/timothy_bw/logout



- Using Anode: Android port of Node.js
- Customising settings is harder
- Requires rooted phone!
- Support includes:
 - Settings system API, e.g. font size
 - Launch applications, TalkBack screenreader
- Good NFC support for “logging” in & out
- Sensors for context-based adaptation

Architecture



- user presents a "key"
 - using a USB drive
 - using an NFC tag (→ demo at our booth)
 - typing a special string on the keyboard
 - ...
- User Listener detects the key and sends it to the Flow Manager



- Flow Manager fetches preferences from Preference Server
- Format = JSON

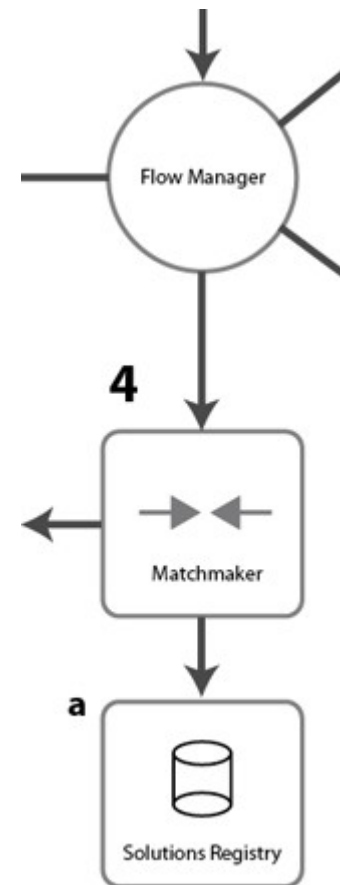
```
(...) {  
  "http://registry.gpii.net/common/language": "en",  
  "http://registry.gpii.net/common/speechRate": 180,  
  "http://registry.gpii.net/common/keyEcho": false,  
  "http://registry.gpii.net/common/wordEcho": true,  
  "http://registry.gpii.net/common/punctuationVerbosity": "all"  
} (...)
```

```
{
  "flat": {
    "contexts": {
      "gpii-default": {
        "name": "Default preferences",
        "preferences": { "http://registry.gpii.net/common/fontSize": 12 }
      },
      "really-bright": {
        "name": "Really bright out",
        "preferences": { "http://registry.gpii.net/common/fontSize": 16 },
        "conditions": [{
          "type": "http://registry.gpii.net/conditions/inRange",
          "min": 700,
          "inputPath": "http://registry\\.gpii\\.net/common/environment/illuminance"
        }]
      }
    }
  }
}
```


- The device tells the Flow Manager
 - what operating system it is running
 - what assistive technologies are available
 - "context information" (ambient light, ambient noise)
 - -> automatically adapt contrast depending on light
 - -> automatically increase sound or switch on captions depending on noise
 - on Android with built-in sensors
 - on PCs through Context-Aware Server

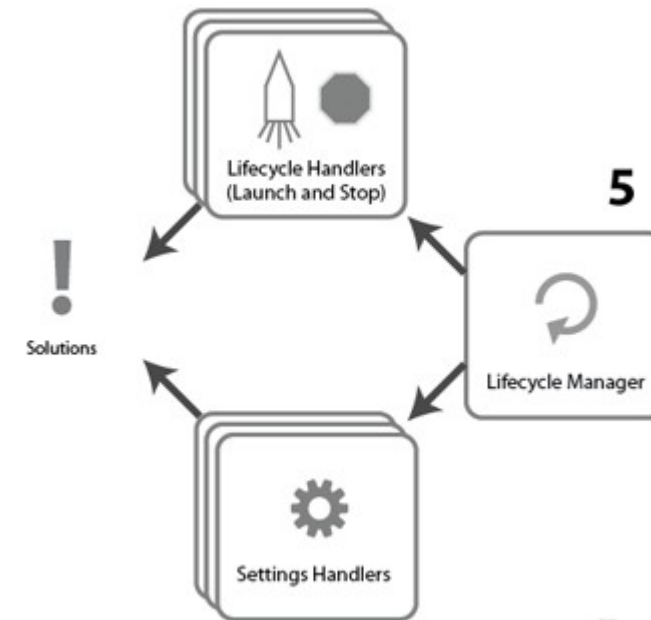
Matchmaker & Solutions Registry

- Flow Manager sends preferences and device info to the Matchmaker
- Matchmaker infers settings for "new" OS or software
- Matchmaker consults Solutions Registry for info on assistive technologies etc.



Launching and Stopping Solutions

- Flow Manager sends settings to Lifecycle Manager
- Snapshot of current settings
- Set each application's settings
- Launch application(s)
- When user "logs out", restore original settings



- Combine adaptations on up to 5 levels:
 - OS
 - Assistive technologies on the OS
 - Browser's accessibility features
 - Web-based AT
 - Web app's accessibility features
- E.g. because browser/web content does not inherit OS contrast settings

How to Integrate with GPII?

You don't need to do much!!

- Define the **settings** of your *solution*
- Where and how they are stored
- How your solution can be launched and stopped

How to Integrate with GPII?

- Define the **settings** of your *solution*
 - Name, data type, value range, default value, possibly relationship with other settings
 - e.g. **invert-lightness** (Boolean; default **false**) in GNOMEShell Magnifier
- Define an **ID** for your solution
 - e.g. **org.gnome.desktop.a11y.magnifier**

```
"org.gnome.desktop.a11y.magnifier": {  
  "name": "GNOME Shell Magnifier",  
  "contexts": {  
    "OS": [  
      {  
        "id": "linux",  
        "version": ">=2.6.26"  
      }  
    ],  
    "isInstalled": [  
      {  
        "type": "gpii.packageKit.find",  
        "name": "gnome-shell"  
      }  
    ]  
  },  
}
```

```
"settingsHandlers": [  
  {  
    "type": "gpii.gsettings",  
    "options": {  
      "schema": "org.gnome.desktop.a11y.magnifier"  
    },  
    "capabilities": [  
      "applications.org\\gnome\\.desktop\\.a11y\\.magnifier.id"  
    ],  
    "capabilitiesTransformations": {  
      "mag-factor": "http://registry\\.gpii\\.net/common/magnification",  
      "show-cross-hairs": "http://registry\\.gpii\\.net/common/showCrosshairs",  
      "transform": {  
        "type": "fluid.transforms.arrayToSetMembership",  
        "inputPath": "http://registry\\.gpii\\.net/common/tracking",  
        "presentValue": "proportional",  
        "missingValue": "none",  
        "options": {  
          "focus": "focus-tracking",  
          "caret": "caret-tracking",  
          "mouse": "mouse-tracking"  
        }  
      }  
    },  
  },  
]
```



```
"lifecycleManager": {  
  "start": [  
    "setSettings",  
    {  
      "type": "gpii.launch.exec",  
      "command": "gsettings set org.gnome.desktop.a11y.applications screen-  
magnifier-enabled true"  
    }  
  ],  
  "stop": [  
    {  
      "type": "gpii.launch.exec",  
      "command": "gsettings set org.gnome.desktop.a11y.applications screen-  
magnifier-enabled false"  
    },  
    "restoreSettings"  
  ]  
}
```

More Info



- Project: www.cloud4all.info
- GPII & contributing projects: www.gpii.net



What is Cloud4all?



Cloud4all is an international project funded by the 7th Framework Programme of the European Union that will advance the concept of the [Global Public Inclusive Infrastructure \(GPII\)](#). The GPII is a project of [Raising the Floor Consortium](#) of academic, industry and non-governmental organizations and individuals. Cloud4all is an European Commission FP7 grant that will develop key parts of

the GPII, building the knowledge base and algorithms needed and evaluating the ability of the concept to work across platforms, technologies and applications. Cloud4all/GPII aim at the following objectives:



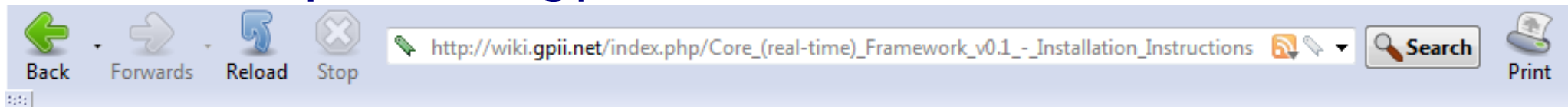
News

- ▶ 10/12/2012 [Cloud4all Newsletter](#) Cloud4all Newsletter Edition I, Volume I
- ▶ 15/11/2012 [Cloud4all Project, 2nd project Hackathon and implementation workshop](#) The Cloud4all Project is organizing its 2nd Hackathon where development teams of existing platforms, devices and services will work on making them compatible with the Cloud4all/GPII architecture.

Have a Look at Our Work



Wiki: <http://wiki.gpii.net/>



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Core (real-time) Framework v0.1 - Installation Instructions

This release supports two platforms: Windows 7 and Fedora Linux with Gnome 3. Installation instructions can be found below.

Contents [\[hide\]](#)

1 Fedora 17

1.1 Requirements:

1.2 Installation Instructions

1.2.1 Ensure pre-requisites

1.2.2 Install node

1.2.3 Install RFID listener

1.2.4 Install and run GPII Personalization Framework

1.2.5 Running the framework in general

2 Windows Installation Instructions

2.1 Dependencies

2.2 Building and Starting

2.3 Setup and Configuration

2.4 RFID Listener

GPII Implementation

Architecture

-- Architecture Overview

-- APIs

Profiles

--- User Preferences

--- Materials & Solutions

--- Matchmaking

Vendors/Implementers

--- Implementations

--- APIs

Unified Listing and
MarketPlace

Testing

Want to Contribute?



Fork our code: <http://github.com/GPII>



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GPII**

<http://gpil.net/>

Joined on Jan 17, 2012

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All Sources Forks M



ini

forked from isaacs/ini

An ini parser/serializer in JavaScript

Last updated 2 days ago

JavaScript ★ 0



prefsEditors

Last updated 3 days ago

JavaScript ★ 0



kettle

A serverside framework based on Infusion framework.

Last updated 9 days ago

★ 1

