HEMERA

A Digital Personal Assistant for Linux

Software requirement Specification

Version 1.0 | Date: 20th April 2019

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1.1 Purpose

Hemera: A digital assistant for Linux based operating system is a inter platform application which can be used through graphics user interface either through voice or keyboard input. This application let user to have OS experience like any other proprietory operating system. This application enables user to have an assistant for doing various small task likes setting alarm, making a note, having a wheather update or cross checking any facts. This is general artificial assistant to do day to day task and can also used on various platforms.

1.2 Scope

There is generally lack of user experience in open source software like Linux and it is one of the major reason casual user do not stick to such platform, but by introduction of applications like Hemera can improve in this segment a lot. As almost all proprietory operating system like Windows and MacOS have their on digital assistants like cortana and Siri respectively, Hemera can serve as the digital assistant for all the linux based operating systems.

1.3 Stakeholders

i. Application Host: Linux desktop OS

ii. Application users: Any linux user can have this application installed into their OS and can use it as per their need.

1.4 Assumptions

- End user have basic knowledge of using a computer with linux and can communicate in English as of now.
- Can invoke application in linux computer
- Can give appropriate permission to linux application.

1.5 Constraints

- Only English is used as GUI and voice input/output as of now.
- Microphone is necessary to use the Hemera at it’s full potential.
- Internet connection is required for all functionality.
- User should have basic knowledge of linux system.

2.0 Functional Requirements

2.1 These application works with backend of Mycroft and Hemera-skill for mycroft.
User shall register himself/herself and device on *mycroft.home*

2.2 **Mycroft Installation Wizard:**

2.2.1 Hemera determines that Mycroft is not installed in the system and starts the Mycroft installation wizard.

2.2.2 User can choose from manual or automated Mycroft Download

a) If manually downloaded, Hemera ask the user to provide location of downloaded files.

b) If automatically downloaded, Hemera automatically determine the download location.

2.2.3 Hemera runs Mycroft installation script.

2.2.4 Hemera verifies Mycroft installation.

2.2.5 Activation step is invoked if necessary.

2.3 **Mycroft Activation Wizard:**

2.3.1 Mycroft sends activation code to user via Hemera.

2.3.2 User registers device at Mycroft.home using the activation code

2.3.3 Mycroft sends activation feedback to user via Hemera.

2.3.4 Hemera exits the wizard and switches to normal GUI.

2.4 **Hemera Verbal Invocation**

2.4.1 User speaks the wake word.
2.4.2 Mycroft goes to active listening mode.
2.4.3 Hemera sends listening feedback to user.
2.4.4 User speaks query.
2.4.5 Mycroft and Hemera acknowledges query.
2.4.6 Mycroft takes action based on the query.
2.4.7 Mycroft redirect certain actions to Hemera.
2.4.8 Mycroft and Hemera sends action completed feedback to user through verbal and textual means.

2.5 **Hemera Manual Invocation**

2.4.1 User hits the wake GUI button.
    2.4.1.1 Mycroft goes to listening mode.
    2.4.1.2 Hemera sends listening feedback to user.
    2.4.1.3 User speaks query.
OR
2.4.2 User types the query in the GUI.
2.4.3 Mycroft and Hemera acknowledges query.
2.4.4 Mycroft takes action based on the query.
2.4.5 Mycroft redirect certain actions to Hemera.
2.4.6 Mycroft and Hemera sends action completed feedback to user through verbal and textual means.

2.6 **User Activates Custom Action**

2.6.1 User hits custom action button on speech bubble
2.6.2 Hemera takes appropriate action based on type of speech bubble.
2.6.3 Hemera redirects to Mycroft if necessary.

3.0 Non-Functional Requirements

3.1 Performance requirements:

- Application shouldn’t crash while in use.
- Should be invoked from any state.
- Should be continuous in conversation

3.2 Safety requirements:

- If application crashes, it should recover from its last used stage
- Should not interfere with performance of other applications.

3.3 Security requirements:

- Application shall not leak personal information.
- Application should limit the access to system files to internet.
- Application should secure web-socket connection to Mycroft.

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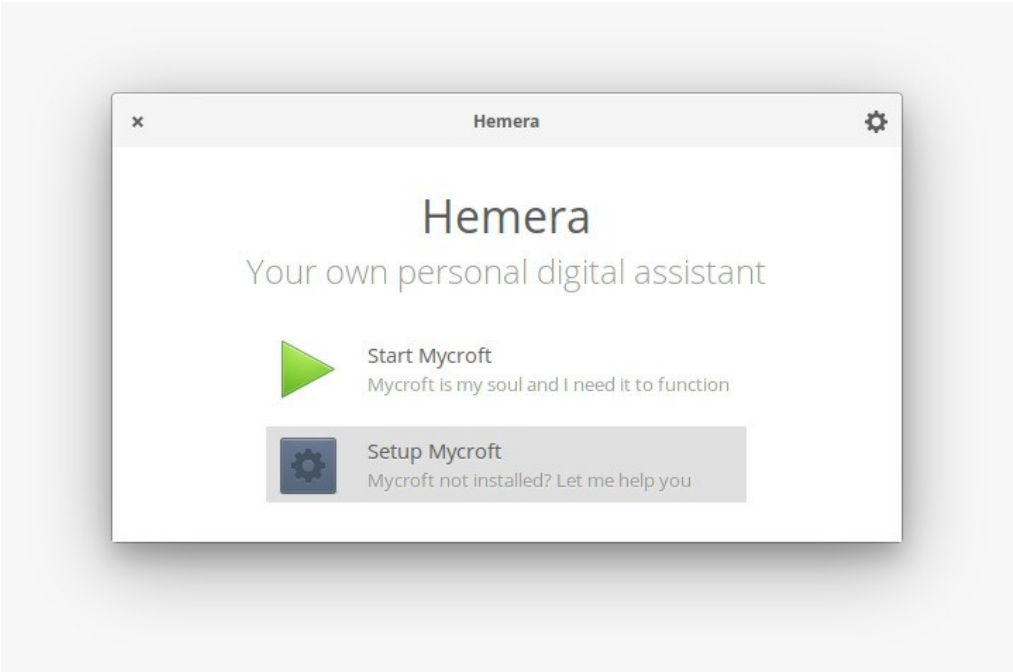
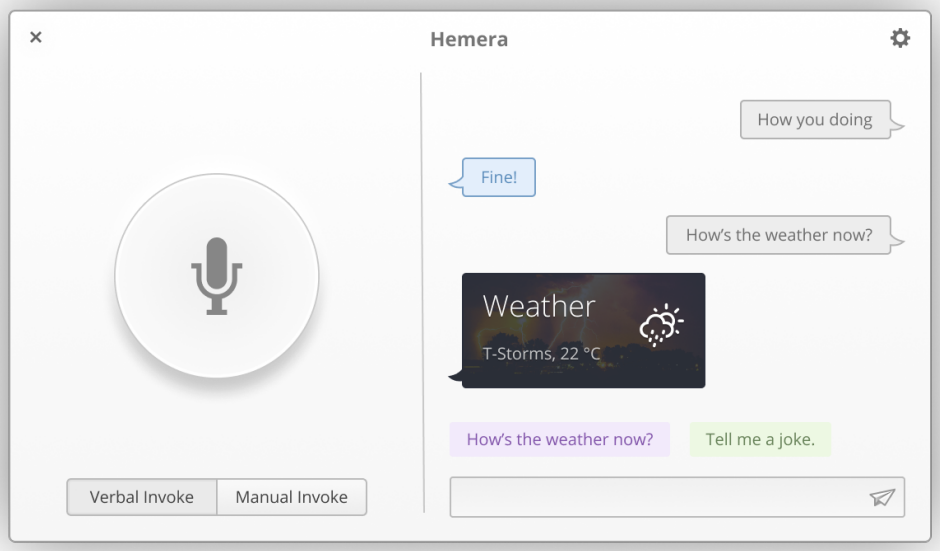
4.0 Interface Requirements

4.1 User Interface





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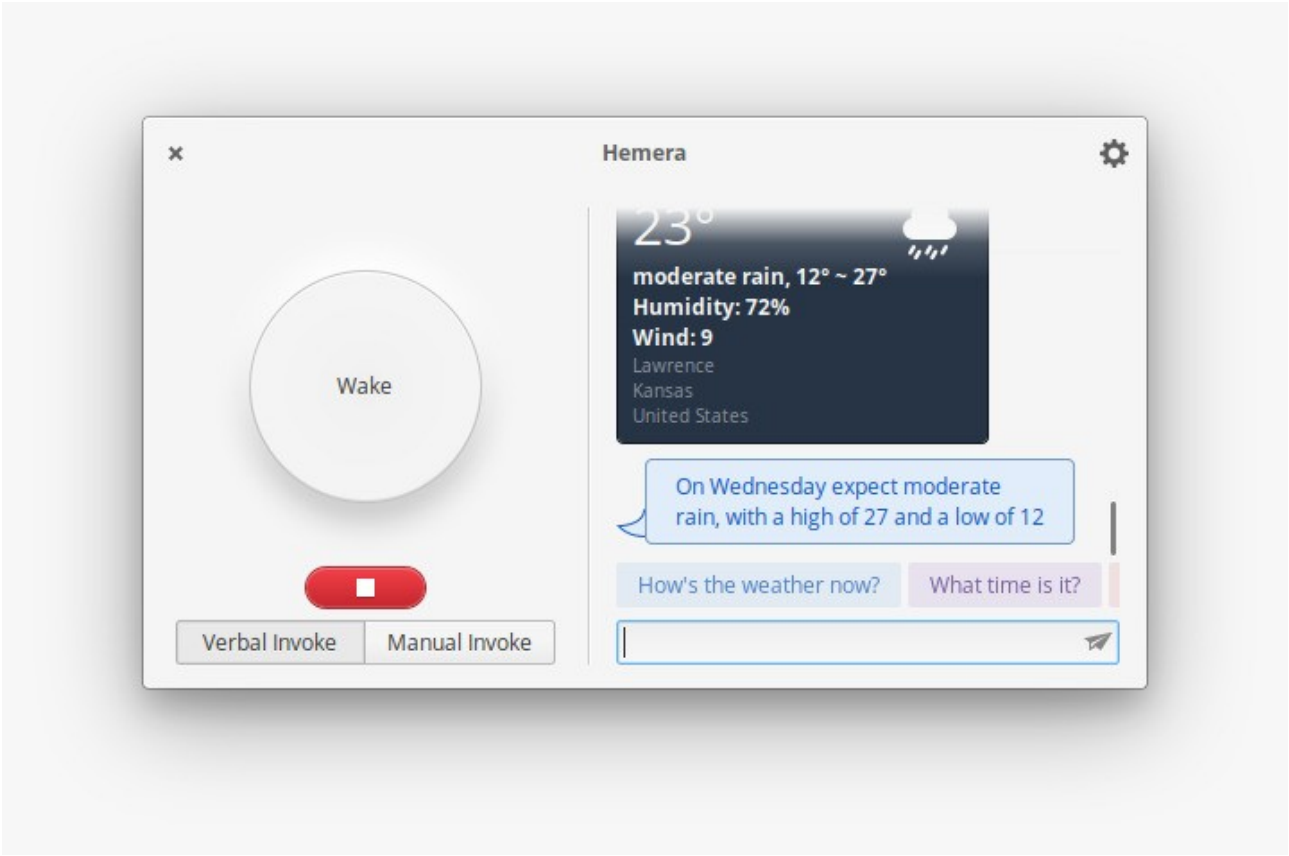

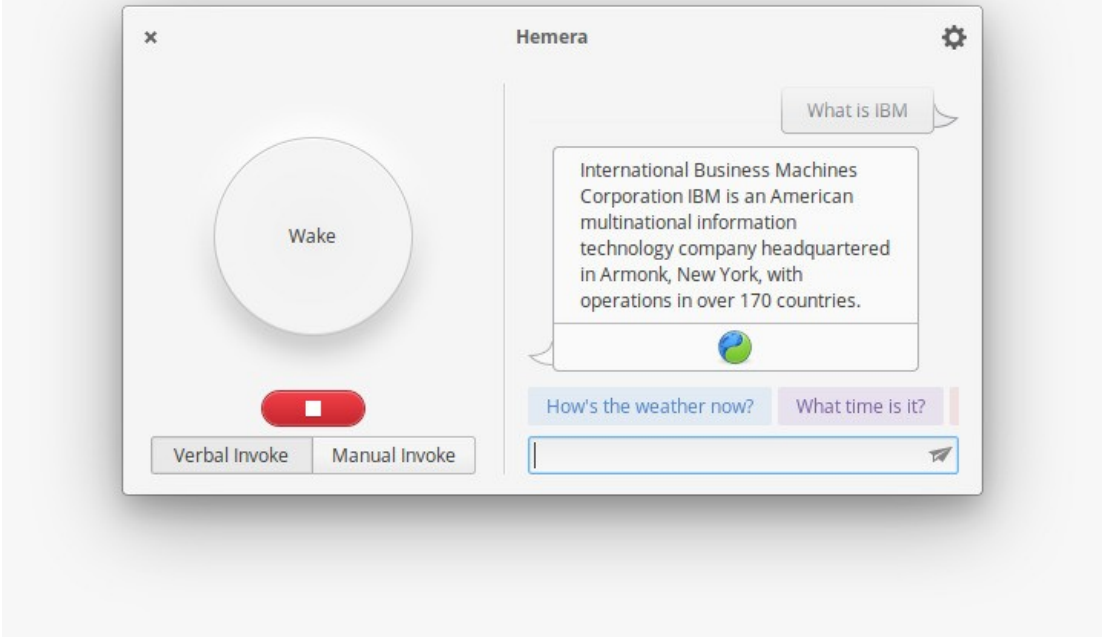

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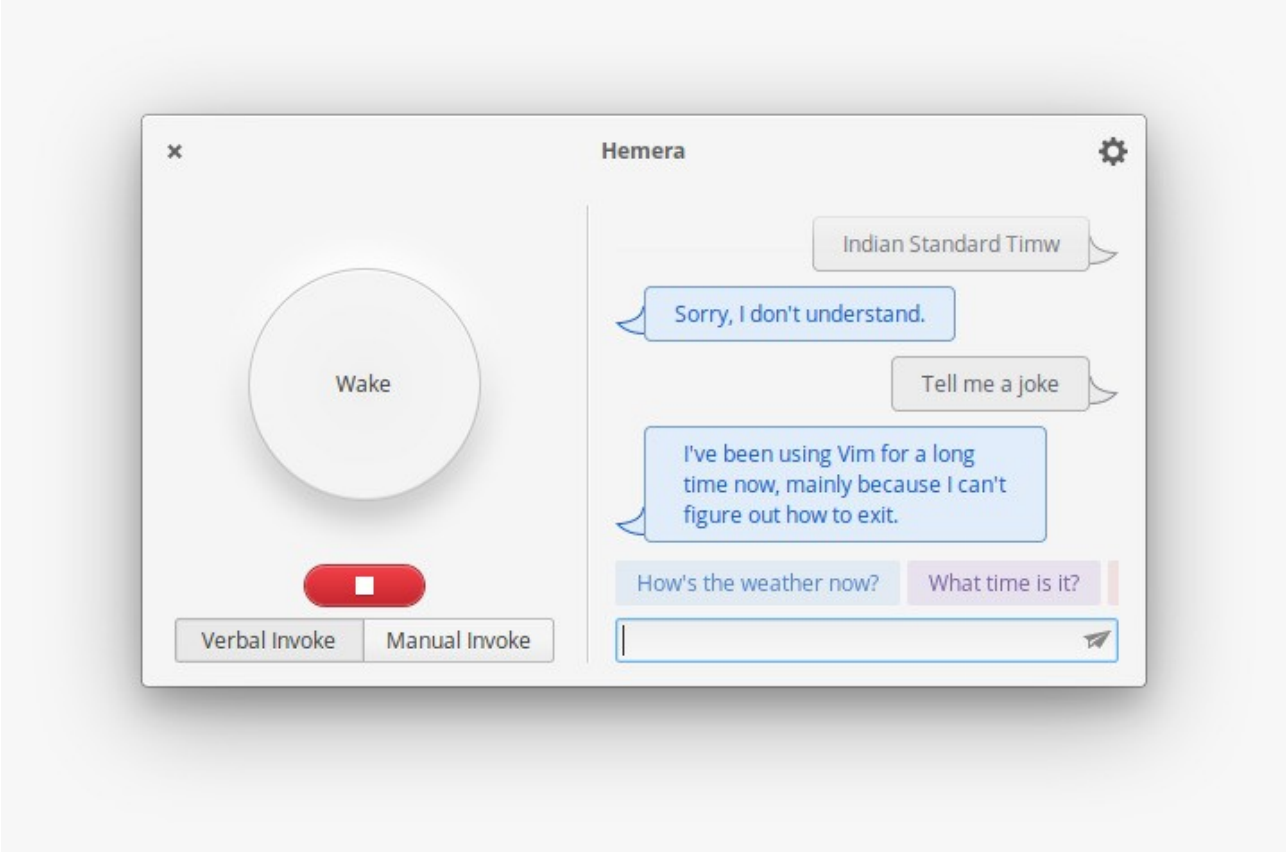

4.2 Hardware Interface

- Application can invoked by voice command

4.3 Software Interface

- It interacts with the OS.
- It interacts with other application software based on skills

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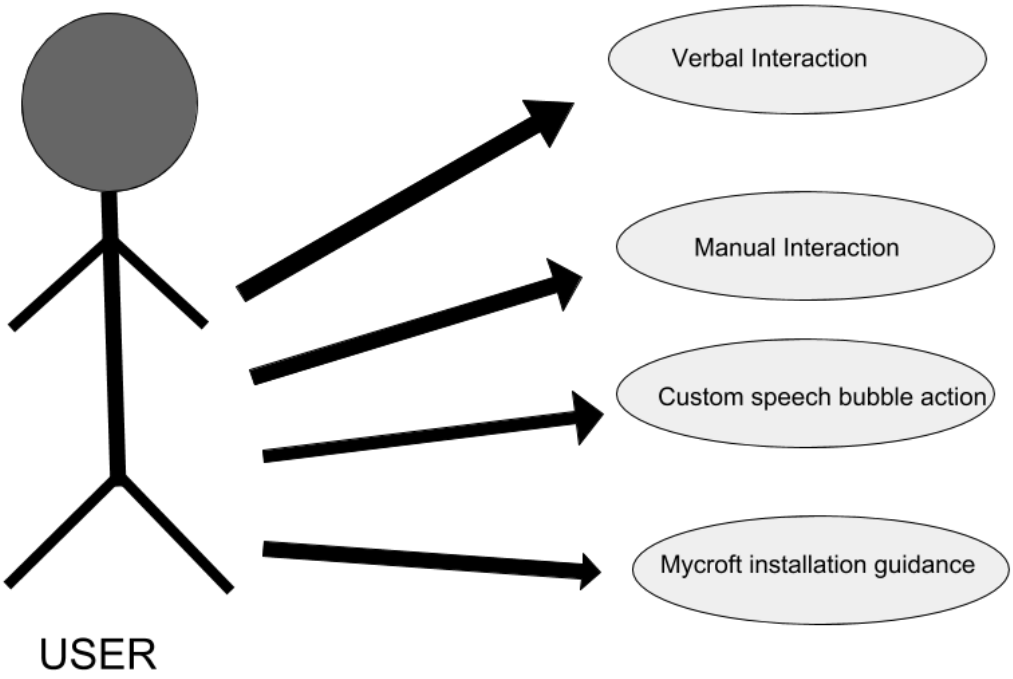
5.0 Use-Case Model

5.1 Use-case Diagram



5.2 Use-case Description

Use-case Template -1

Use Case id:	1.1
Use Case Name:	Verbal Interaction

Actor:	User
Description:	Take input through microphone
Trigger:	Verbal invocation: Wake word
Flow of Events:	1. Application change to active listening mode. 2. User speaks query 3. Mycroft acknowledges the query and takes action 4. Mycroft sends feedback to user via Hemera 4. Application goes back to passive listening mode.

Use-case Template - 2

Use Case id:	1.2
Use Case Name:	Manual Interaction

Actor:	User
Description:	Take input through keyboard and mouse.
Trigger:	Trigger through GUI buttons

Flow of Events:	1. User types query 1.2. User confirms query 1.3. Hemera sends query to Mycroft *OR* 2. User hits the wake button 2.2. Application switches to listening mode 2.3 User speaks query 4. Mycroft acknowledges the query and takes action 5. Mycroft sends feedback to Hemera 6. Mycroft stops listening 7. Hemera notifies user that the query has been acknowledged

Use-case Template - 3

Use Case id:	1.3
Use Case Name:	Custom Speech bubble action

Actor:	User
Description:	Perform special actions on speech bubbles.
Trigger:	User clicks on buttons on the speech bubbles
Flow of Events:	1. User clicks on speech bubble action button

	2. Hemera takes action based on the speech bubble and context 2.1. Hemera can run any specific code based on the action requested 2.2. Hemera can send request back to Mycroft based on the action requested

Use-case Template - 4

Use Case id:	1.4
Use Case Name:	Mycroft Installation guide

Actor:	User
Description:	Guide user through installing Mycroft
Trigger:	Hemera is started but Mycroft is not installed
Flow of Events:	1. User starts Hemera 2. Hemera attempts to connect to Mycroft 3. Upon failure of last step, Hemera attempts to launch Mycroft 4. Upon failure of last step, Hemera determines that Mycroft is not installed in the system and starts the Mycroft installation

	wizard 4.1 Hemera asks user to download Mycroft manually or asks permission to download it automatically 4.2 Upon auto download, Hemera determines the download location and proceeds to install Mycroft in the system 4.3 Upon manual download, Hemera asks the user for the download location and proceeds to install Mycroft in the system. 5. Upon installation, Hemera launches device registration wizard if necessary. 5.1. Mycroft sends activation code to user via Hemera's GUI 5.2. User registers device on mycroft.home website using the given activation code. 5.3. Mycroft gives activation feedback to user via Hemera 6. Hemera relaunches and reconnects to Mycroft if necessary. 7. Hemera switches to the normal GUI ready for user interaction

6.0 Glossary

Term	Definition
Verbal Invoke	Starting the app with verbal input through a microphone
Manual Invoke	Starting the app through input devices like keyboard or mouse
Vala	An object oriented language used to buil Hemera
Mycroft	Mycroft is a 3rd party system that takes care of Speech recognition, Text to speech and skill management
Cross-platform	Computer software that is implemented on multiple computing platforms
Cortana	Digital personal assistant by Microsoft
Siri	Digital personal assistant by Apple
GUI	Graphic User Interface
Meson	An open source build system
GTK+	A toolkit to create graphics user interfaces

7.0 References

Document No.	Document Title	Date	Author

8.0 Revision History

Version	Date	Name	Description