



# Google Glass

## Overview and User Guide

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The mission of our venture firm is to create and introduce innovative financial and finance-related technologies. Therefore we do our best to be the first to learn about new market trends and find out what people will need tomorrow.

We keep the track of internet services, latest software and hardware developments, and test new devices.

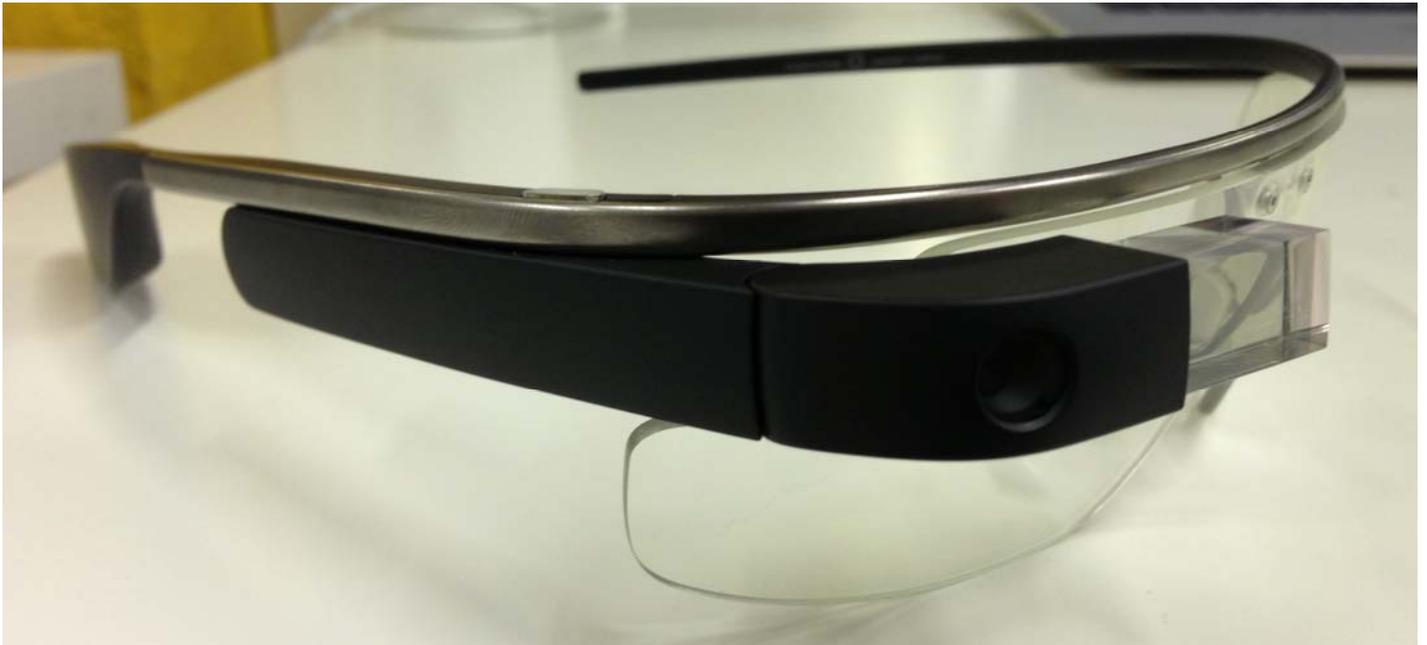
We were among the first in Russia to get Google Glass Explorer and work with it.

The overview of Google Glass includes our use recommendations and can be regarded as a user guide.

## 1. GENERAL DESCRIPTION

Google Glass is the first commercially available wearable computer designed for mass use. The device consists of titanium-rimmed glasses with interchangeable lenses. Google Glass includes head-mounted display (HMD) placed above our right eye and camera, which has the ability to take photos and record 720p video.

Another distinctive feature of the device is the dynamic speaker designed as a vibrating surface contacting the skull of the user. Sound vibrations are conducted directly to the inner ear without generating the audible sound waves.



Google Glass is a convergent device that combines the following functions:

### 1. Communication:

- e-mail: receive, read and send mails<sup>1</sup>;
- phone calls: receive incoming calls and dial numbers when connected via Bluetooth with your smartphone on Android or iOS<sup>2</sup>;
- Google Hangouts chats;
- social networks: posting to social networks Facebook и Twitter.

### 2. Internet:

- Google search for information, the results are displayed on the device display;
- search for geographic location and tracks using Google Maps<sup>3</sup>;

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<sup>1</sup> At the moment (as of 12.11.2013) is compatible with Gmail only.

<sup>2</sup> Supports Apple iPhone 4S/5, as well as Android-based devices manufactured by HTC.

<sup>3</sup> Available only for smartphones on Android OS running My Glass App (<https://play.google.com/store/apps/details?id=com.google.glass.companion>).

- weather forecast for the next 2 days.

### **3. Video Diary:**

- recording 720p HD videos (from 10 sec to unlimited duration);

- take photos - 5 MPix.

Google Glass Apps in the future will let you create augmented reality by detecting environmental signals and information and visualizing it on the device display.

Google Glass is being developed by Google X. The project is led by Barak Parviz<sup>4</sup>, who has also worked on putting displays into contact lenses.

The first official information about Google Glass was published in The New York Times in late February 2012. The Explorer Edition is available to testers and Google I/O developers in the United States for \$1,500, to be delivered in early 2013, while a consumer version will be available in 2014 for \$ 300 - 500<sup>5</sup>.

A few dozens of applications have been so far developed for Google Glass, but according to analysts, the volume of app market for Glass will hit \$6B by 2016<sup>6</sup>.

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<sup>4</sup> <https://plus.google.com/100149980664588993669/posts>

<sup>5</sup> [http://en.wikipedia.org/wiki/Google\\_Glass](http://en.wikipedia.org/wiki/Google_Glass)

<sup>6</sup> <http://www.gazeta.ru/business/2013/05/15/5322453.shtml>

## 2. TECHNICAL SPECIFICATIONS AND INTERFACES

From a technical point of view Google Glass is a wearable mobile computer on Android 4.x OS without the support of cellular networks.

### 2.1. Google Glass Technical Specifications

Google Glass technical specifications are shown in the table below.

Specification	Value
Display/ Projector	“High resolution display is the equivalent of a 25 inch high definition screen from eight feet away”, video resolution WVGA (800x480 Pix)
Camera Resolution	5 MPix (2500 x 2000 Pix), 720p HD video
Connectivity	Wi-Fi 802.11 b/g, Bluetooth (supposedly v.4)
Processor	Dualcore TI OMAP 4430 (Cortex-A9), frequency 1.2 GHz
ROM (Read-Only Memory)	16 Gb, available to users ~ 12,5 Gb
RAM (Random Access Memory)	1 Gb, available to users ~ 650 Mb
Connecting to a PC	MicroUSB
Operating System	Android v. 4.0.4
Dynamic Speaker	Contact vibrating dynamic speaker (sound transmission from the device to the inner ear through the skull bones)
Microphone	In place
Battery	“One day of typical use” <sup>7</sup> , presumably 700 – 800 MAh
Detectors	Accelerometer, GPS receiver

Google Glass connects to the Internet only by Wi-Fi. Bluetooth can be used to pair your Glass to your smartphone.

### 2.2. Google Glass Interaction

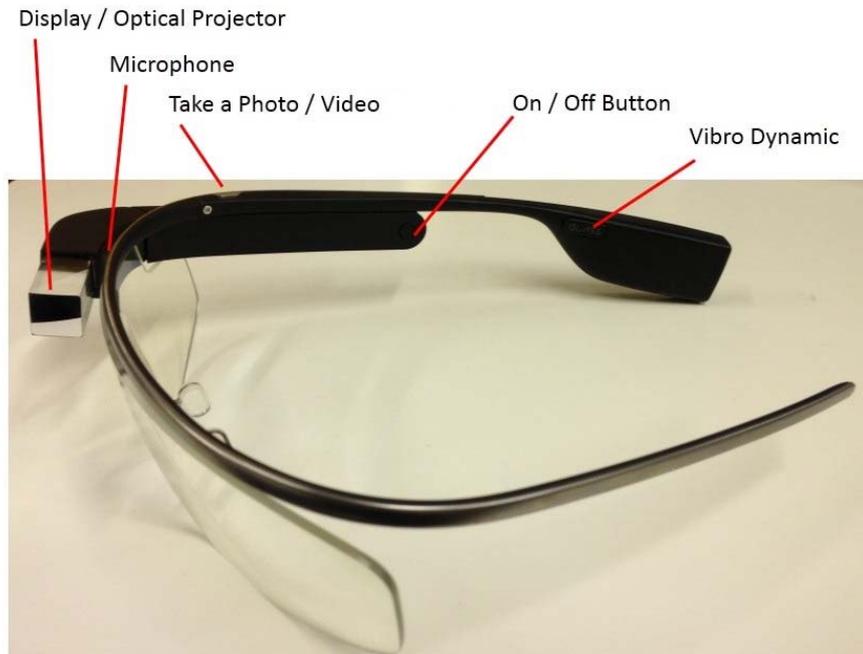
You can use touch gestures on the touchpad, a microphone for sound recordings and voice command's recognition, buttons to turn on/off the device and for photography / video recording purposes. Google Glass

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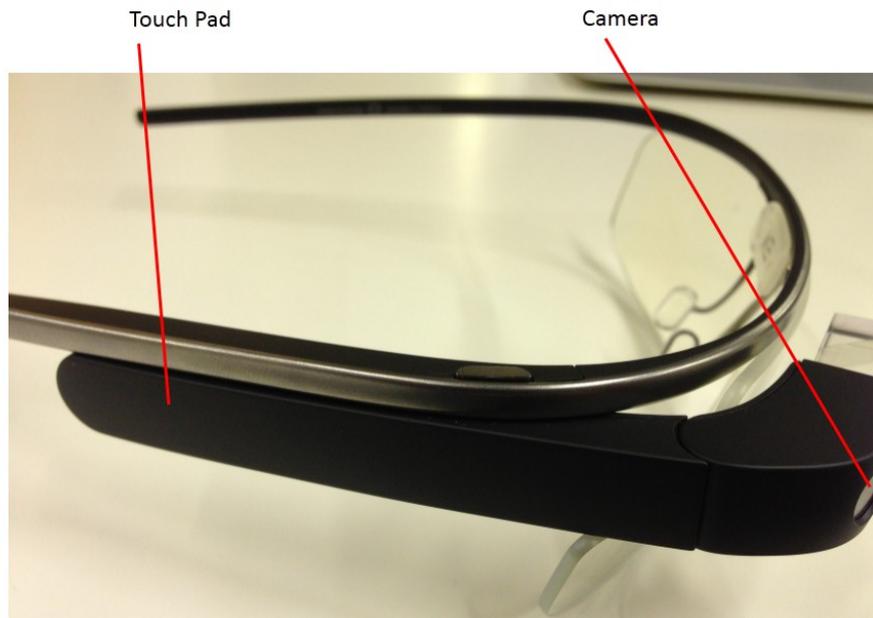
<sup>7</sup> [https://support.google.com/glass/answer/3064128?hl=en&ref\\_topic=3063354](https://support.google.com/glass/answer/3064128?hl=en&ref_topic=3063354)

Google Glass interface is shown in the picture below.

## Google Glass Interface



## Google Glass Interface



**On / Off button** turns the device on and off.

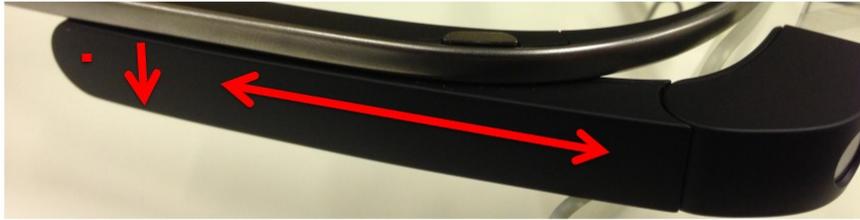
**Capture a photo/video.** Press the camera button to capture a picture. After snapping a picture, you'll see a brief preview of the shot you've just taken. Capturing video clips with Glass works similarly to taking a picture. Press and hold the camera button. Glass defaults to recording video clips of ten seconds; to continue recording past the default limit, press the camera button.

**Touchpad** recognized user's motions.

Typical Google Glass gestures:

- Swipe forward and back to move through items on your timeline;
- Touch the touchpad once to select an item;
- Swipe down to close menu (and get back to a previous menu entry) and to close mobile apps.

## Google Glass Touch Pad Motions



### 3. SETTING UP GOOGLE GLASS

Turn Glass on and off by pressing the round power button, located on the inner right side of the device.

When turned on, Glass is active when it can interact with the user and display information, or it goes to a sleep mode, when the display is off and power is conserved.

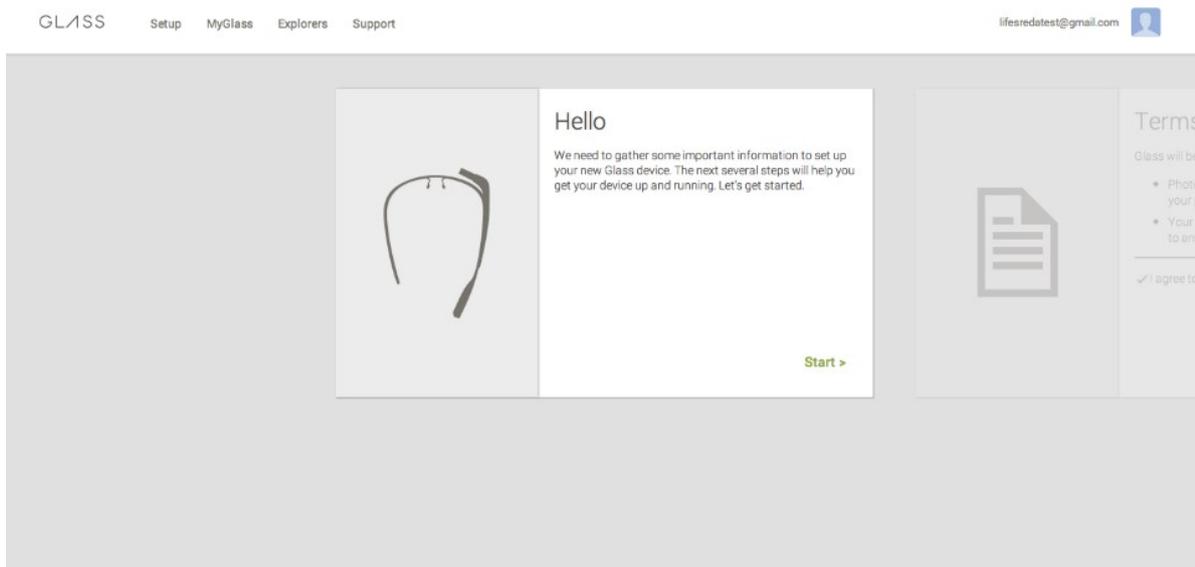
After a period of inactivity, the display will turn off. Turn on the display by tapping on the right side of the device or by tilting your head up.

You can set Glass to go into a sleep mode whenever you take it off (On Head Detection). This means that the touchpad will become locked; Glass will stop receiving phone calls and will stop playing notification chimes. Turn on On Head Detection from the Settings bundle.

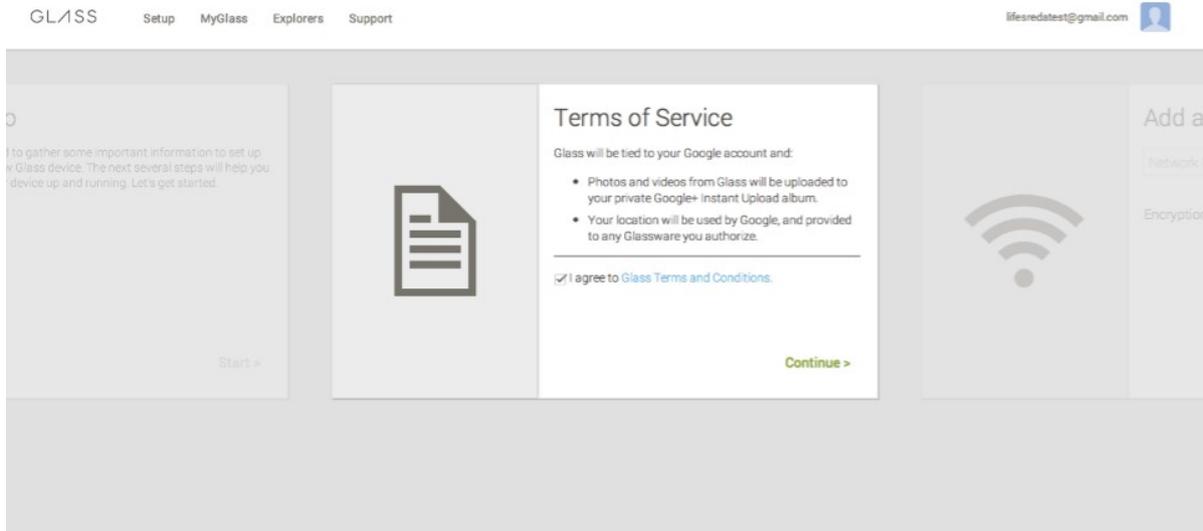
To start using Glass, you should register it via your Google Account. Plug it into a computer via USB and go to [www.google.com/myglass](http://www.google.com/myglass) this will initiate a registration process, which consists of four steps.

Steps 1 and 2 prompt the user to accept the Terms of Use.

## Google Glass Registration. Step 1

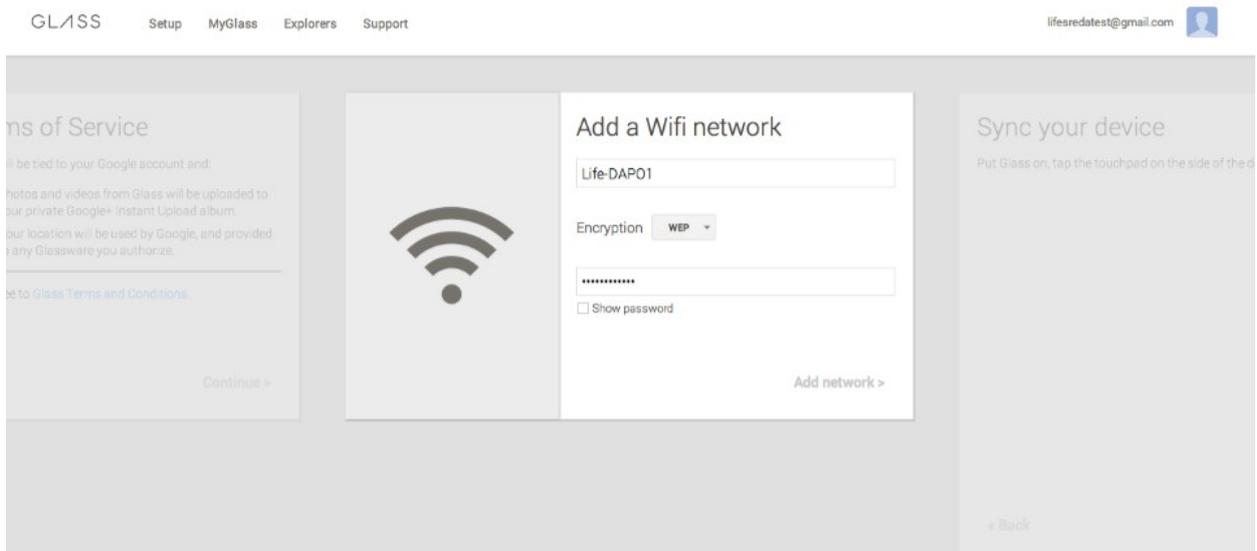


## Google Glass Registration. Step 2

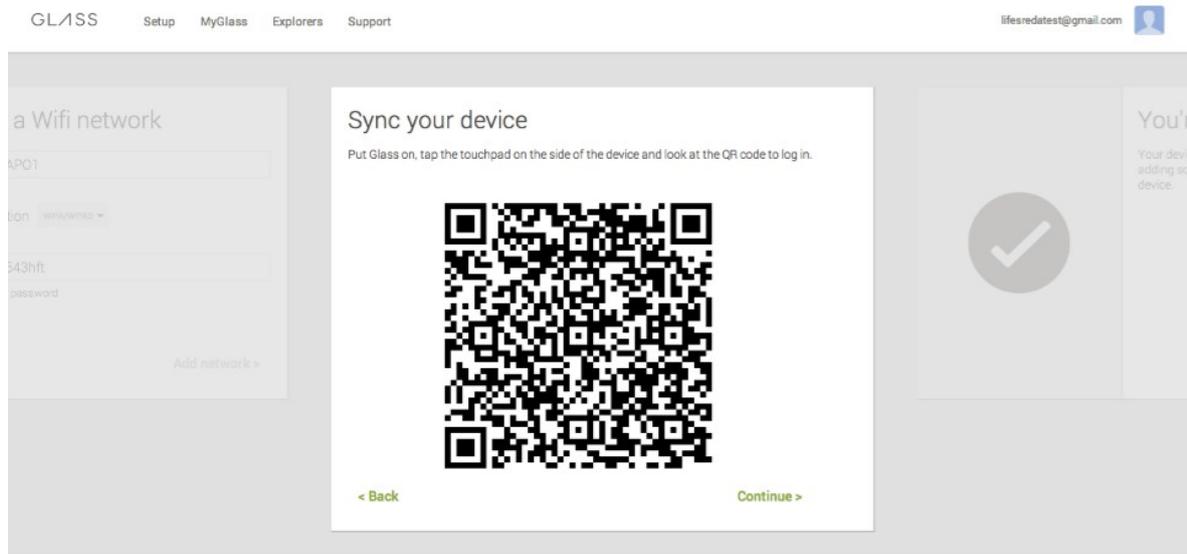


Step 3 requires you to connect to a WiFi Network. Step 4 generates a QR-Code, which should be scanned by Glass; it includes the settings for the devices, including WiFi authorization.

## Google Glass Registration. Step 3



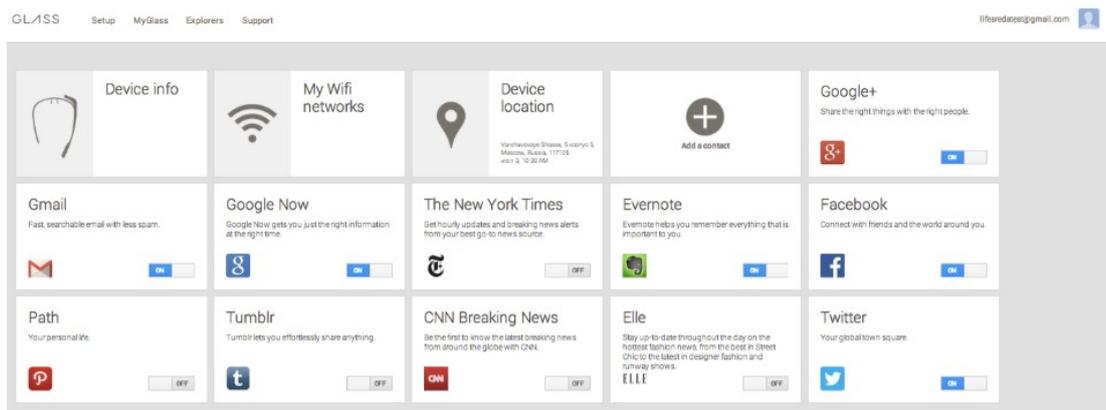
# Google Glass Registration. Step 4



When Google Glass scans the QR Code, it automatically sets itself up using parameters from the PC, including WiFi connection. When it is done, you are good to go.

At this moment a Google Glass Home Page should become available via your google account at [glass.google.com/myglass](http://glass.google.com/myglass), where you can manage your settings and install apps.

## Google Glass User Profile



## 4. GOOGLE GLASS APPLICATION

Currently (June 2013) Glass has the following domains for application:

1. Communication: using the device to communicate with other people via mobile, Gmail, Hangouts etc.
2. POV photo and video
3. Internet search using Google Voice Search
4. Social Networks.

### 4.1. Glass User Menu

The user menu appears as soon as the device is turned on. The Home screen will greet you with the current time and the words "ok glass".



Swipe backwards to scroll through weather and settings, allowing the user to configure various Glass features (Wi-Fi, Bluetooth, sleep mode settings, on-head and tilt-up detection, current software version) and a weather forecast for 3 upcoming days.

Swipe forward to scroll through your timeline; note that all activities (pictures and videos taken, Google search history etc.) are sorted from newest to older (left to right).

On top of graphical interface, Glass recognizes the following English commands:

- Record a video: «ok, glass, record a video»
- Take a picture: «ok, glass, take a picture»
- Use Google Now: «ok, glass, [question]»
- Google+ hangout: «ok, glass, hang out with [person/circle]»
- Search: «ok, glass, google [search query]»
- Image Search: «ok, glass, google photos of [search query]»
- Translate: «ok, glass, say [text] in [language]»
- Navigation: «ok, glass, give directions to [place]»
- Messaging: «ok, glass, send a message to [name]»
- Weather: «ok, glass, how is the weather in [location]?»
- Flight Information: «ok, glass, when does flight [flight number] depart from [airport]?»

The quality of speech recognition is exceptionally high, even commands with accent are recognized properly.

## 4.2. Usage Scenarios

As of today (3<sup>rd</sup> of July, 2013) Google Glass may be used in the following ways:

- a) **Bluetooth headset:** using your smartphone, pair Glass with your iOS/Android device (no PIN required). However, making or answering a phone call should be done via a smartphone.
- b) **Taking POV pictures and videos:** you can start video recording by saying “ok, glass, record a video” or take a picture by saying “ok, glass, take a picture”, or by pressing the camera button.
- c) **Using Gmail:** New incoming email messages appear in the menu. Using touchpad you can view the card which displays the subject and snippet of the message. Reply to received messages by speaking your reply. New mail is composed in the same way. Note that the receiving address should already be in your Google contacts.
- d) **Chatting in Google Hangouts:** sending and receiving messages to and from Google contacts. You can record new messages by speaking it.
- e) **Googling for Places and Organizations:** Search for information, such as «ok, glass, google [restaurants in Moscow]» displays a list of places. The user can then swipe through the list and tab the link-to-call to contact the place.

## 4.3. Connecting to a PC

PC's running Windows XP/7 or Mac OS X detect Google Glass as a portable media player. The Glass is connected via a standard MicroUSB cable. Google Glass allows for import of photos and videos taken, but it's impossible within the current software version to copy files on Glass and use it as USB Flash storage.

## 5. CONCLUSIONS AND RECOMMENDATIONS

At the moment, Glass doesn't have a comprehensive ecosystem of apps and services. Some market leaders (Evernote, Facebook, Twitter, etc.) have developed their Glass apps that mainly allow just sharing the content.

Leading analysts (Mary Meeker from KPCB) forecast a rapid increase in demand for wearable gadgets, the same way that it happened with personal computers, smartphones and tablets after the release of iPhone.

Experts at Life.SREDA VC firm consider Glass and similar gadgets as very new channels for service-user interaction, which increase the role of context in user actions, primarily in the fields of e-commerce, communication and search for information, as well as payments.

That being said, Glass is capable of only changing the way users interact with services and receive information. The core of user actions and demands and the essence of the problems and tasks will not undergo significant transformation.