Internet in a Flash (IIAF)

Internet in a Flash provides students who have no access to the Internet method for using key Science, Technology, Engineering and Mathematics (STEM) content. This will assist students in closing the 'homework gap' by providing at home, access to selected portions of its rich content. IIAF will provide a capability similar to that provided by Encyclopedia Britannica in an earlier era, only in a portable digital format containing the information student need to study selected subjects at home. The IIAF shown in Figure 1: Internet in a Flash, provides this information on portable electronic media that can be taken with the student and used anywhere she or he has a computer running Windows 7 or later with a USB port.

Figure 1: Internet in a Flash

All data and software are recorded on a 64 Gigabyte (GB) Universal Serial Bus 3 (USB3) flash drive. In order to use the device simply insert it into a USB slot on your computer then start Windows Explorer and select the USB drive letter. You will see the directory structure shown below in figure 2: Internet in a Flash Directory.

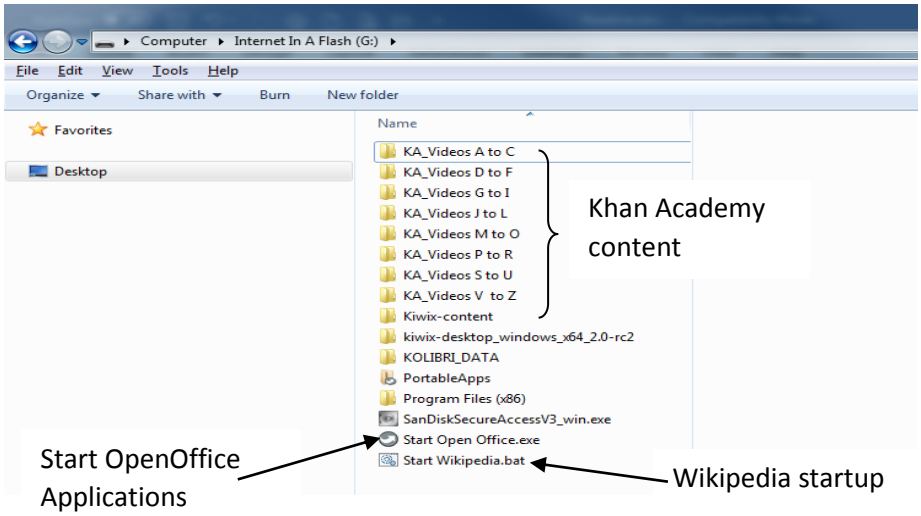
The drive contains three sections:

Khan Academy (KA) math and science training MP4 videos (approx. 16 Gigabytes- GB)

Wikipedia math and science articles (approx. 30 GB)

Apache Open Office with alternatives for Microsoft Word, Excel, Power Point

Figure 2: Internet in a Flash Directory



Khan Academy

The Khan Academy (KA) section contains video tutorials in science, math, economics, history and the arts. In this version of IIAF these are arrange alphabetically into 8 groups of three alphabets each. Future version will have an improved user Interface (UI) arranged by grade level and subject matter. This content represents only a fraction of the available KA video content, the next version of IIAF will contain substantially more.

To play a video tutorial, click on its icon and the video will launch in the associated video player. The video player on Microsoft (MS) Windows systems is usually Microsoft's Media Player, which ships standard with the Windows Operating System (OS).

In section A – C the first video is a tutorial on Indefinite integrals an Antiderivative. The last video in the section is on T cells in Immune system physiology.

In section D – F the first video is a High school biology tutorial on Data to justify experimental claims examples and the last one is about a Fundamental theorem to evaluate derivative.

In section G – I the first video is about Cosmology & Astronomy and discusses Galactic collisions, Stars, black holes and galaxies, and the last example shows how to write a program using Python for an Iterative Fibonacci Function.

In section J – L the first video is about Jacobian matrices and the last is an early math example called Losing tennis balls demonstrating addition and subtraction.

In section M – O the first video is about the Physics of mechanical waves and sound titled Mach numbers. The last video is about Oxidative Phosphorylation and Chemiosmosis.

In Section P – R the first video is an Algebra II example of a Parabola Conic sections and the last video is in Chemistry and is about Rutherford's gold foil experiment on the electronic structure of atoms.

In section S – U the first video is about Saddle points and the last video is an example in economics about utility maximization.

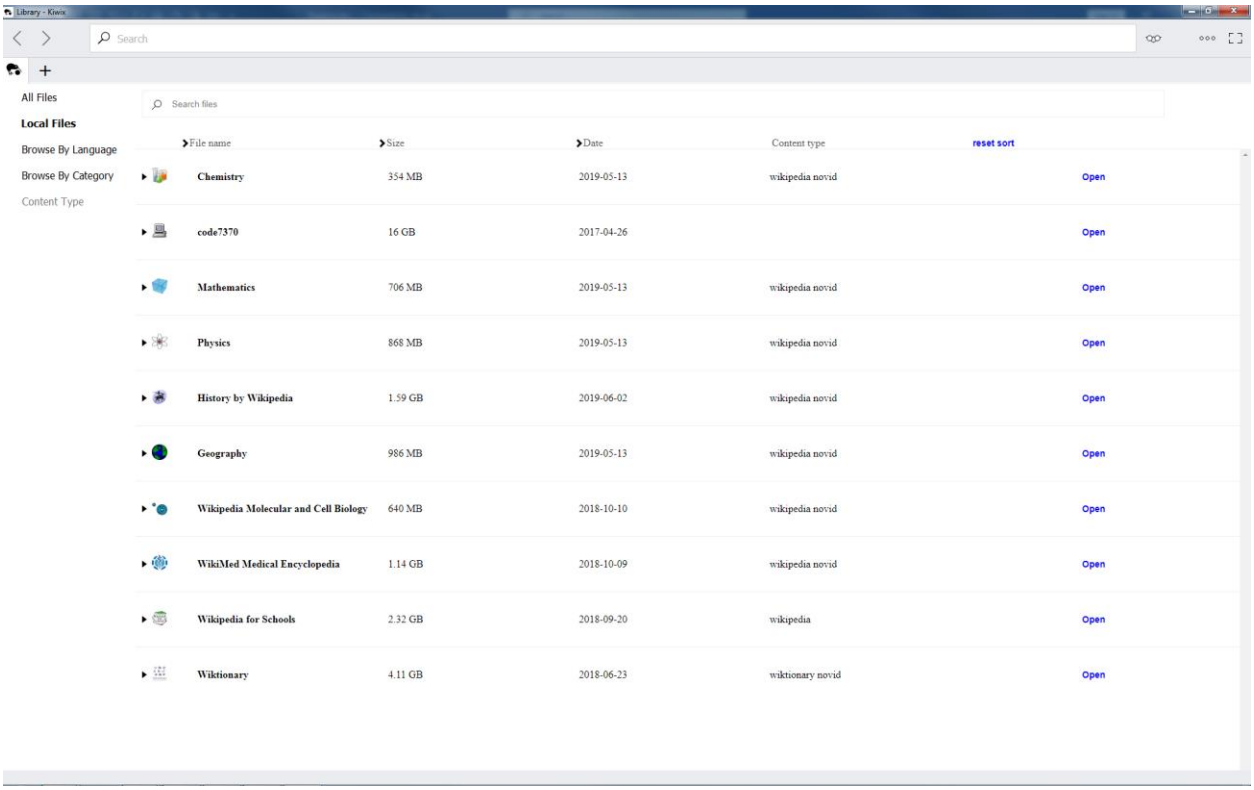
In section V – Z the first video in chemistry is about valence electrons and the last video on probability and statistics titled Z-statistics vs. T-statistics.

Wikipedia

Wikipedia is the premiere online encyclopedia and provides open access to information on almost every conceivable subject. You start the viewer by clicking on the 'start Wikipedia.bat' batch file. This launches Kiwix, a viewer for Wikipedia content. A screen shot is shown below in Figure-3: Kiwix Desktop Viewer.

If the viewer does not display on the screen after a few seconds, check the task bar for the Kiwix player icon which you can click to maximize.

Figure-3: Kiwix Desktop Viewer



As shown in the screen shot, content on the following subjects: chemistry, computer science (code 7370), mathematics, physics, history, geography, molecular and cellular biology, medical encyclopedia, Wikipedia for Schools and Wiktionary a Wikipedia dictionary are included. Most of these sections are self-explanatory but the section titled Wikipedia for Schools requires a bit more explanation. This section contains a collection of over 6000 articles for school children on a variety of subjects. It is targeted to middle school and above but is informative for students of all ages.

Open Office (OO) Applications

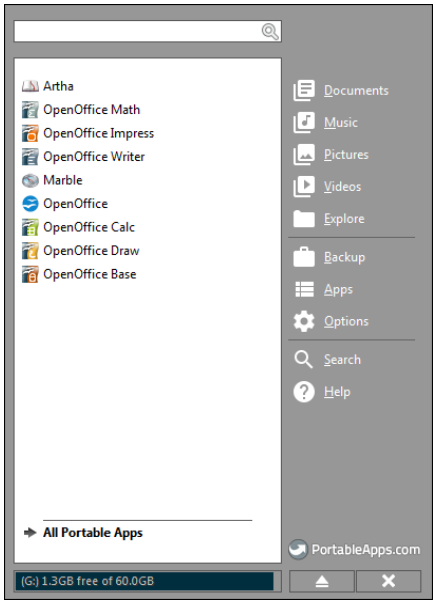
The OO Applications are a series of Open Source applications that provide alternatives for some of the popular office application suites.

In order to start the OO Applications, click the ‘start Open Office’ icon. This will launch a UI with all of the Open Office Applications as shown below in Figure-4: Open Office Applications.

There are nine OO Applications that the user can launch. They provide capabilities similar but not always equivalent to Microsoft (MS) Office applications, along with a couple of applications not found in MS Office.

Applications include Artha an Open Thesaurus, Open Office Math, a tool for writing mathematical formulas, Open Office Impress, a MS Presentation alternative for preparing presentations.

Figure-4: Open Office Applications



Open Office Writer is a MS Word alternative, Marble provides a globe similar to Google Maps with a background of the constellations. Marble allows the map to be zoomed in and out on a variety of settings. The Open Office application provides a different UI for Open Office, with many of the same applications. Open Office Calc provides a MS Excel alternative with most of the same features as excel.

OpenOffice Draw provides a drawing tools and finally OpenOffice Base is OO MyBase and is a database tool that is similar to MS Access.