

Speaker notes for presentation about EasyTimeline at Wikimania 2005.

Front page

EasyTimeline is a Mediawiki extension that helps you with building graphical timelines

I'll talk about what has been achieved so far, and what is cooking right now. After that I'll talk about a new project, the Unified Timeline of Human History.

And I hope to inspire some of you enough to get involved

One Year EasyTimeline

EasyTimeline was introduced in June 2004. Within a year about 500 charts were produced on all wikipedias combined. My estimate is that about 300 of these are original charts and the other 200 are translations. Many wikipedias could not really participate because EasyTimeline does not yet support Unicode fonts. More about that later.

Why timelines?

They are concise

Provide a good introduction to a theme or period

Provide a good recapitulation

Give a sense of proportion / scale

Show synchronicity

Scope varies from the life story of one blues musician...

Existing timelines cover all periods and topics. Some are very specialized, for example this timeline deals exclusively with the life of one blues musician,

It is of course a coincidence, but three days after this timeline had been added to the article (by user Necrophorus) the article was promoted to 'Excellent Article'.

...to human evolution

other timelines are very broad in scope, like this one (by user Moverton) which covers the whole evolution of mankind.

Too bad I can't show the whole timeline in readable format, but it is 2000 pixels high. It covers 7 millions years.

The same author also made charts about the history of the universe, and yet another chart which deals mainly with the first second after the big bang. Quite a contrast.

Many charts are one-dimensional

There is also a huge variation in complexity. Many charts follow the development of one single topic and thus need one bar only. So these can indeed be called timelines properly.

I made this chart about Tour de France winners myself, shortly after EasyTimeline was introduced. I'm not really an expert on the Tour de France, often notice it has started, when it is its second week, but I thought it would be nice promotional material, and indeed this chart has been translated in about 10 languages since. Of course it helps that there is not much to translate anyway.

Yet quite a few are two-dimensional

Some timelines try to look at a period from different angles. This often means the chart will become two- rather than one-dimensional.

This chart shows the major developments in World War II in the Pacific Theatre. One axis describes time, the other space. All countries and island groups have a bar of their own that shows in different colors when the territory changed hands.

Extra bars describe sea battles and conferences. As with any EasyTimeline chart the blue texts are links to other Wikipedia articles.

This chart, by the way, is the one that started it all. I made it many years ago, with a drawing package that no longer exists. When I wanted to add it to Wikipedia I only had a printed version left, so I needed to rebuild the chart.

I then thought: let me make this as simple as possible, and so I started working on the script.

Not all charts are timelines 1

There are not only timelines built with EasyTimeline. People think of really creative ways to use the syntax, even if some of them are quite labor intensive.

This chart by (user Lzur) deals with vocal and instrumental pitch ranges.

The topmost bar shows pitch ranges in hertz. Then vocals and instruments are shown, in groups like woodwind instruments, percussion instruments, etc.

It was first created on the Polish Wikipedia. But only after the author created an English version as well, it started to become translated to other wikipedias.

Not all charts are timelines 2

This map of Thebes has been added eight months ago (by user Schuppi) . Yet no-one since then copied this idea. It was an impressive experiment, but I strongly hope and expect there will be easier ways sometime to produce a clickable map within Wikipedia.

There will be several presentations on Sunday in room E10 that deal with geographical data and mapmaking for Wikipedia.

No title

With this chart I realized that EasyTimeline could also be used to compose abstract expressionistic art pieces.

Not all charts are timelines 3

I'm sure you will agree that all those texts and figures partially conceal the deeper layers of beauty and emotion, and thus almost hide what the artist wanted to share with us.

On the other hand the metaphysical aspects of this work now become almost subliminal, and invite the viewer to revisit and re-evaluate this work again and again.

Basic procedure 1

I'll tell you now some more about the basic procedure for building a chart.

Only on article save or preview time Mediawiki will check for a new or changed script. It will then invoke EasyTimeline, which parses the script and transforms it into a completely different set of commands that can be understood by the rendering package Ploticus. Ploticus is mainly used for scientific visualizations, but it proved well suited for the task, it is open source and well supported. So Ploticus produces the actual bitmaps, either png or gif, and a scalable vector version, which is in fact available on the Wikipedia server but not shown right now on article display time.

Basic procedure 2

The syntax is rather extensive with some 15 commands and twice as many attributes, but most of these are optional, fortunately.

Basically what you do is:

First define the general layout: the size of the image, chart area, the orientation of the chart (vertical, horizontal) and whether there should be a visible scale. You may already reserve some space for a legend. You also need to specify the date format and of course the period that the chart will visualize.

You may attach symbolic names to colors and bars, for easy reference later on

Then you specify a list of historic events and periods, with optionally detailed layout info, like font size, text color, etc

Finally you can add a legend and some freely positioned lines and texts

Example

Here is a small step-by-step example. I'll try to be brief.

The first 6 lines define the general layout. Size, position, orientation etc.

Then follows a block that defines the actual events, which are shown as a short line, and periods which are shown as a bar segment (in this case you see only periods)

One thing I'd like to point out about the syntax is how defaults are set. You need to specify attributes like bar color, text alignment, font size etc only once and it then applies to all consecutive lines until a new value is specified. However if one or more of these layout attributes are specified on the same line with historic content, they override the default for that one line only.

In the code example you see how the default bar color is defined as red, and later changes to blue. One bar is drawn in green. This does not become the new default because it was specified with historic data on the same line.

This approach aims for conciseness while retaining flexibility. You'll get used to it soon enough.

How to start?

If you never tried the syntax up till now, it may still seem a bit overwhelming.

Most authors do not start from scratch. They rather find an existing chart that is similar to the one they want to build, and then clone it. All charts and their script code from all wikipedias have been collected into one place so you can easily browse them. Once a month this collection is refreshed as part of the wikistats job.

Since recently there is another alternative. Wikipedian Wen Chen has built a web form that allows you to build the script step by step by filling in the boxes and previewing intermediate results. It is still a beta but it looks very promising.

External fonts and Unicode support 1

Here is a sheet about recent developments, namely addition of Unicode compatibility and support for external fonts. This feature has been asked for many times, and also was promised right from the start, so it is about time to deliver.

Major hurdle was, that rendering package Ploticus needed to be patched as well, so that it can provide font metrics to EasyTimeline. The new feature has been tested and is ready in a Cygwin environment (which is Linux emulation under Windows).

Since I do not have a Linux machine myself, there is no recompiled Ploticus executable yet for Mediawiki. Maybe one of you can help with this. Best case this will take you 30 minutes, but of course best case never occurs.

Unfortunately there is no proper support yet for right-to-left languages, like Hebrew and Arabic. This hopefully will be added later. This issue needs to be dealt with again within Ploticus, and this time I asked its author Stephen Grubb for assistance and he promised to look into it, but that may take some time.

External fonts and Unicode support 2

So soon you will be able to specify any truetype font that is available on the Wikipedia servers, and even use several fonts per script. Probably the most amazing font that exists is code2000, developed by James Kass. The font is shareware but a server license is cheap. It supports almost all existing Unicode characters, and thus can render most languages.

You see Hebrew and Arabic letters in the test images, but the texts are displayed in reserve order.

Grand Unified Timeline of Human History

So far I talked about what EasyTimeline has brought us up till now and will bring us soon. Now I'd like to switch the focus to 'beyond soon'

I believe that although a lot has been achieved in the past year with EasyTimeline, it only scratches the surface of what timelines could bring to Wikipedia. So I defined a new project, which is currently in its design phase.

The project is called "The Grand Unified Timeline of Human History". As the name suggests ambition level is high. Fortunately we have time on our side.

I'll read the mission statement to you:

This project aims to produce a set of graphical timelines in a consistent and simple format, that together offer a coherent and grand perspective on the whole of human history in all its aspects.

A layered approach

Here you see how the many charts could be ordered into a hierarchy. Charts high in the hierarchy have a very broad scope. Below that we find subjects that are more and more detailed, and more limited in subject matter and temporal scope.

I shaded the highest and lowest charts in this diagram, to indicate that in my view these are beyond the scope of the project initially.

If we restrict the project scope to major periods of human history, we can focus on, and deal with organization and presentation of those themes first.

People will continue to build timelines outside this project, which later can be incorporated when the focus is widened.

All aspects of human endeavour

On the previous sheet history was ordered as a set of rising and falling civilizations. Of course that is only one way to look at human history. Other aspects of human development deserve a set of charts in their own right. We can map the development of science, of art, of religion.

Of course the examples given, are just that: examples. The complete trees will some day consist of over a hundred charts. Or better said, the trees will never be complete, just like Wikipedia will never be complete, as more detailed charts will appear all the time.

Is it feasible?

Building all these timelines will be a challenge. There is much to be done. Yet it does not seem over ambitious, because:

There is no time limit. It may take a year. It may take two years. In fact as I just said it would never be ready since more and more detailed timelines can be added.

Wikipedia itself is proof that almost no task is too big when enough enthusiastic people put their hands together.

Much of the data gathering has already been done. Each timeline can draw from several articles containing all relevant data. The task is therefore more an editorial one:

Where to draw the boundaries per timeline (period, geography, topics)?

Which data to add to a timeline (type of data, level of detail)?

How to present the data

Timeline of the Migration Periods

There are already tens of charts that can be easily integrated into the project. This is the first of two examples:

It covers many ages and focuses on one aspect, migration.

Tableau Histoire Hominidés

Five timelines all about human evolution

In a few cases we even have a luxury problem. The evolution of the human species is amply mapped. We mainly need to merge and reconcile these 5 existing versions.

Guidelines

Here are some concept guidelines. Of course they may change as discussion progresses.

Charts need to fit into a predefined broad supported **conceptual framework**

Charts aim to be **regionally and culturally unbiased**

Charts use a uniform and **intuitive navigation system**, e.g. specially marked cross links

Charts use (to a degree) a **uniform presentation**

Think of color-coding of events, font settings, general layout, size, etc

Charts are consistent in what **type of information** and how much **detailing** belongs on a certain level in the chart hierarchy

Roman Empire (overview)

In order to bring some uniformity to the project, work has been done on defining a standard layout, which can serve as a model for most charts.

User Dschwen on the English Wikipedia originally started this chart.

It has been extended and reformatted since then for this project. There is still room for improvement and more experimentation is needed.

It covers only the last 5 centuries of the history of the Roman state, namely the period that we know as the Roman Empire.

This overview is of course unreadable. On the next sheet you see a detail of it, and hopefully you can read that one.

The original is already 1600 pixels wide. To describe the whole Roman History with this level of detail in one chart we would need to position 4 high-resolution monitors next to each other to display it.

Roman Empire (detail)

As you see the chart has been divided into layers.

The top layer divides the whole period into episodes. (there is more than one way thinkable to make this division, so maybe we need to show overlapping schemes)

Then all emperors are named and their period of reign is shown, which was often very short.

Few civilizations were as militaristic as the Romans, so a separate layer for major wars and battles has been added to this chart. Since the Roman Empire was actually in a state of war almost continuously, much work remains to be done here.

Other events, civilian in nature, are collected in the fourth layer.

In fact culture and science could use a layer of their own. There are quite a few writers that are not listed yet.

The bottom layer tries to summarize major developments in as few words as possible. This is more work than it seems. For the first few centuries I read every article about each emperor and tried to name the major developments. This is doable for the first century AD and almost so for the second. But in the third century the main event during the reign of most emperors was the fact that they were murdered quite soon during a revolt. So for the sake of ultimate conciseness I added only the word 'revolt' for each these emperors, and even then ran out of space. So finally, twenty or so articles and an hour reading crystallized into 'many emperors killed during revolts'.

This exercise taught us one big lesson. The less words you spend on any item in a chart the more time it takes to find the proper ones.

What now?

One contributor remarked that it would perhaps be best to concentrate on very basic charts first with a minimum amount of information. These charts could then be added to articles for navigational purposes. More detailed charts like the one about the Roman Empire would best be presented as an article in their own right, and will take much more time to complete.

So where do we go from here?

First: We'll have more discussion and experimentation

Then: List all charts that are needed for the highest levels of the tree

Then: Build concise versions of those high level charts

Finally: Proceed with larger detailed charts

I hope you all agree that timelines could become a major asset for Wikipedia, both for presenting large topics in a concise fashion and for use as navigational aid. If you want to get involved please contact me in the coming days.

Thank you

Let me finally thank the authors of all the diagrams I showed, and all wikipedians whose dedication to EasyTimeline made this presentation possible.