

Trondheim Underground Radio* (TUR)

Overview of the project

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ABSTRACT

Trondheim Underground Radio (TUR) is a mixture of Internet radio and portal to information about small bands in the middle region of Norway. The aim of this short article is to present an overview of the project, to keep me remember how it works and to give other readers a look into this spare time project of mine.

1. INTRODUCTION

Late January 2001 I started setting up my own Internet radio, which I called “Trondheim Underground Radio” (TUR). Mostly because I had an old computer which I wanted to use for something, and I wanted to combine playing with this computer and my interest in music. I had been listening to similar radios on the Internet¹, so setting up my own could be fun I thought. This project is carried out in my spare time, but it is also valuable in my daily job when we need content to test out new network services or other stuff. As a result of this TUR is for example used for testing purposes in *6NET* (three-year European project with thirty-one partners from the commercial, research and academic sectors)².

2. INTERNET RADIO

Figure 1 shows the basic functionality that we would like to give our listeners. This is a modest list of what a user should be able to do when he/she enters the homepage of TUR and want to listen to the stream of music that we’re playing constantly.

A problem with todays software solutions for implementing

*www.turmusic.no

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¹Mostly www.indiepopradio.com

²See www.6net.org for more information

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Figure 1: Basic functionality for listeners.

a Internet radio is that they tend to be in either one of these categories:

1. give to many features (to complicated) and are more suited for personal use (or closed circle of users)
2. they are just directly streaming a predefined set of tracks/songs

We would like to have something in between, and at the same time this solution should be able to run on *Linux*³.

When TUR was started the first streaming solution I ended up using was based on *Icecast* for doing “shoutcast streaming”, which is streaming of MP3-encoded music over the HTTP-protocol [2]. Bundled with this software package is also a client to deliver the source stream of music that the icecast server hands out to the listening clients. The usual way of operating this system is like category 2, described in the previous paragraph, where you set up a predefined playlist of MP3-files to be played (sequentially or randomly).

³Linux is a free Unix-type operating system originally created by Linus Torvalds with the assistance of developers around the world.

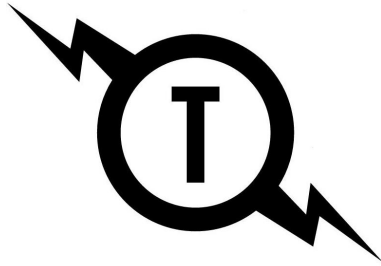


Figure 2: The logo of TUR.

To give the listeners the ability to interact with this streaming system I found another software package called *IceDJ*. This is a set of perl-scripts that together with a web-server and the streaming server will give the listeners a way to interact with the “radio”. The two main scripts are:

`icedj.pl` reads and maintains the playlist, streams music to the icecast server and generates history (current/recent songs) and playlist web-pages

`request.pl` is a CGI script to handle requests from listeners through a web-page

There is also functionality to use templates for describing the layout of the web-pages and logic to limit the number of requests from the same listener, block specific IP-addresses, etc. IceDJ gave me a good answer to my questions, but today the problem is that this software hasn't been upgraded for several years and nobody is doing bugfixing. TUR is still using this software, but we are constantly looking for a more up to date solution.

3. DESIGN ELEMENTS

In the end of May 2001 people started to be aware of the project, and this was when *This Way Design*⁴ finished creating the design elements of TUR. The perhaps most important part of this was an easily recognized logo, as you can see in figure 2, but this also resulted in a new layout of the homepage on web.

I wasn't to concerned about this part myself, but today I'm glad others were interested in “shaping” TUR, because I see now that this is a very important part of giving the listeners something to relate to. In the beginning we didn't have a domain name of ourselves either, but during August 2001 `turmusic.no` was established. A simple, catchy name (in Norwegian “TUR” means something like “walk” or “stroll”), logo and other design elements (fonts, colors, etc.) and a simple domain name, together it gave us more visitors and the bands taking part in the project got more attention.

⁴www.thiswaydesign.com

4. PORTAL TO INFORMATION

This project was started without any thought about what it should be in the future. It was merely me fooling around, to see how my old computer⁵ would perform when streaming music, but after a while it ended up serving a small community of people. I quickly realized that I didn't want to run an ordinary Internet radio, but instead wanted TUR to be some kind of portal to the living “forest” of small underground bands in the middle part of Norway. This shouldn't be only my own project, but a joint effort by the artists and myself to promote music and activity in the region.

In addition to the music being played day and night, the other aspect of TUR is information that is available. If someone listen to a band they like, they're only a mouse click away from more information about the band. Most of the bands have their own homepages, and a list of all the bands is available on one page. Links to the artists can also be found in the playlist, which is showing all the tracks that are played.

It is important to have some information that is regularly updated if you want people to visit often. A forum for discussion is one way of creating a homepage that is more “alive”, and “Trondheim Underground Radio Forum” is the main forum that serves this purpose for us. This is a forum for general discussions, and in addition we have one that serves as a market for buying and selling instruments, recorders, etc. and one that is a forum for information that is “moderated” by administrators (to keep the level of junk postings down). The software that runs this forum is called *Phorum*, written in *PHP* and we use *MySQL* as the database backend. More than 20000 postings are stored in the general discussion forum, so it's a popular service. The database is also used to store information about upcoming events in the “TUR calendar”.

Information to the bands (ways of getting financial support, how to organize a tour, what you should remember when you're signing a contract, etc.) and information about the bands (to serve listeners, media, people in the music industry, etc.) are stuff that we've been working on since the beginning. This is a never ending task, and demands more resources then we have today.

5. TUR ON TOUR

Figure 3 show the travel route of *TUR on tour* number 3. This was one of the longest and most ambitious concert tours that we went on, with a rented bus and 25 people traveling on a three day tour. Concerts were played in Førde, Bergen and Oslo, before we went back to Trondheim.

Concerts were something that was added to the project after we got support from some of the Norwegian cultural funds. So far we have received support from *Frifond*⁶, *Musikkverkstedordningen*⁷ and *TTF*⁸, and it has enabled us to travel out to other regions in Norway to promote the bands.

⁵Intel Pentium 90 MHz computer with 64 MB of memory.

⁶www.frifond.no

⁷www.mvo.no

⁸www.kulturrad.no



Figure 3: TUR on tour #3.

In addition to these tours we have also cooperated with *Trondheim Student Society* and celebrated the first and second year existence of TUR (about 700 bought ticket to the first concert evening, and the second one was sold out with more than 1400 people entering). We've had cooperation with the student society's radio station as well, to broadcast live show (called *TURban*) on air, twice a month.

6. PROMOTING THE MUSIC

Another way of promoting the music of the bands is to try to participate in meetings, conferences, etc. This gives us an opportunity to speak about all the musical activity in our area of Norway, and we try to make other people curious of what we are working on. For example:

- "TUR people" have participated on several *by:Larm*⁹ conferences
- a Nordic workshop in Roskilde (responsible for one of the workshops) organized by *Fajabefa*¹⁰ in October 2002
- a seminar/workshop in Malmö organized by the *Nordic Council and Nordic Council of Ministers* in August 2003

Sometimes we also try to comment on related topics discussed in Norwegian national newspapers and broadcast channels.

7. TECHNICAL EXPERIMENTS

As I mentioned in my introduction TUR is also valuable in my daily job at *UNINETT*¹¹ to test out new network services. In particular we've spent some time testing out:

⁹ www.bylarm.no

¹⁰ Changed name to *Rytmisk Musik Danmark* - www.rytmiskmusik.dk

¹¹ www.uninett.no

IPv6 [1] which is the new "Internet protocol" to be used in the future. This protocol is using longer addresses¹² and includes new options and refinements of the protocol elements.

Multicast which is used to reduce the amount of duplicated data that is broadcasted to end users, using either IPv4 or IPv6.

We have also tested out live streaming of some concerts.

8. CONCLUSIONS

After more than two years of operating TUR I've seen it grow from a small project into something that artists in our area of Norway are aware of. There are plenty of tasks on our "todo list", and a never ending list of new ideas from other people, but unfortunately there is a limited list of available resources. This is always the case of such spare time projects, I think, but the important part is that such work create more activity in the region and (hopefully) bring the parties together in more collaborative work.

9. ACKNOWLEDGMENTS

There are a lot of people who have been involved in the TUR project. I would specially like to thank Even Fallan, who has contributed a lot of effort and is part of the core TUR team, and also Håvard Gjølseth who has been doing the important design work. Some other people who should be acknowledged for their work, interest and help with TUR: Alexander Buchmann, Askil Holm, Line Antonsen, Vegard B. Havdal, Jørgen Yri, Joakim Faxvaag, Stig Venås, Edgar Andraa Lien, Rune Sandnes, Trond Engum, Tommy Dahlen, Frank Aakvik, Pål Hagen, Hans Almåsbaakk and Terje Vullum. Many thanks as well to all the artists that have participated in the project. *You* are what TUR is all about.

10. REFERENCES

- [1] S. Deering and R. Hinden. RFC 2460: Internet Protocol, Version 6 (IPv6), Dec. 1998. Status: DRAFT STANDARD.
- [2] R. Fielding, J. Gettys, J. Mogul, H. Frystyk, L. Masinter, P. Leach, and T. Berners-Lee. RFC 2616: Hypertext Transfer Protocol - HTTP/1.1., June 1999. Status: DRAFT STANDARD.

¹² IPv4 address of TUR is 158.38.152.240, but IPv6 address is 2001:700:1:2:2c0:f0ff:fe4e:1d43.

APPENDIX

A. SOFTWARE USED

This is a list of the software used for running Trondheim Underground Radio, with the version numbers as of today:

RedHat Linux (release 7.2)

operating system (www.redhat.com) and a lot of basic software packages not mentioned here

Apache (version 2.0.46)

web server (www.apache.org)

Icecast (version 1.3.12)

MP3 streaming server (www.icecast.org)

patch for IPv6 functionality

(www.turmusic.no/ipv6/icecast-1.3.12-ipv6.diff)

Perl (revision 5.0 version 6 subversion 1)

programming language (www.perl.org)

IceDJ (version 0.9.14)

network radio functionality

(www.turmusic.no/icedj-0.9.14.tar.gz)

MySQL (version 2.23.56)

database (www.mysql.com)

PHP (version 4.3.2)

scripting language (www.php.net)

Phorum (version 3.4.3a)

discussion forum (www.phorum.org)