Revolutionizing scientific communication and collaboration

Konrad Förstner, European Molecular Biology Laboratory, Heidelberg, Germany

http://konrad.foerstner.org

Allen Press Emerging Trends in Scholarly Publishing Seminar

Washington, USA

April 12, 2007

Motivation

Communication is essential for science

- Exchange inside the scientific community
  - Science is built on the previously done work
  - Avoid redundancy – do not invent the wheel twice
  - Find collaborations
  - Get inspiration
- Make knowledge available for the general public

Motivation

Scientific communication and *Web 2.0*

- New web technologies dubbed as *Web 2.0* make communication and collaboration cheaper, easier, faster and decentralized.
- They are complementary to current scientific communication but might become a substitution for those classical channels.

We are just at the beginning

I find it ironic that science is about the adoption, discovery and exploitation of new knowledge and techniques, yet the biggest revolution on the web is passing us by.

Greg Tyrelle (*Nature*, 1 December 2005, 438, 548-549)

Scientists are more interested in their careers and grants than using tools that promote better communication and data sharing.

David Lipman

"He's optimistic that this attitude may change in the future, however, especially as a new generation used to communicating through social sites such as MySpace enters research."

(*Nature*, 1 March 2007, 446, 10-11)

We are just at the beginning

I find it ironic that science is about the adoption, discovery and exploitation of new knowledge and techniques, yet the biggest revolution on the web is passing us by.

Greg Tyrelle (*Nature*, 1 December 2005, 438, 548-549)

Scientists are more interested in their careers and grants than using tools that promote better communication and data sharing.

David Lipman

"He's optimistic that this attitude may change in the future, however, especially as a new generation used to communicating through social sites such as MySpace enters research."

(*Nature*, 1 March 2007, 446, 10-11)

We are just at the beginning

I find it ironic that science is about the adoption, discovery and exploitation of new knowledge and techniques, yet the biggest revolution on the web is passing us by.

Greg Tyrelle (*Nature*, 1 December 2005, 438, 548-549)

Scientists are more interested in their careers and grants than using tools that promote better communication and data sharing.

David Lipman

"He's optimistic that this attitude may change in the future, however, especially as a new generation used to communicating through social sites such as MySpace enters research."

(*Nature*, 1 March 2007, 446, 10-11)

There is so much to talk about ...

HubMed: pubmed rewired

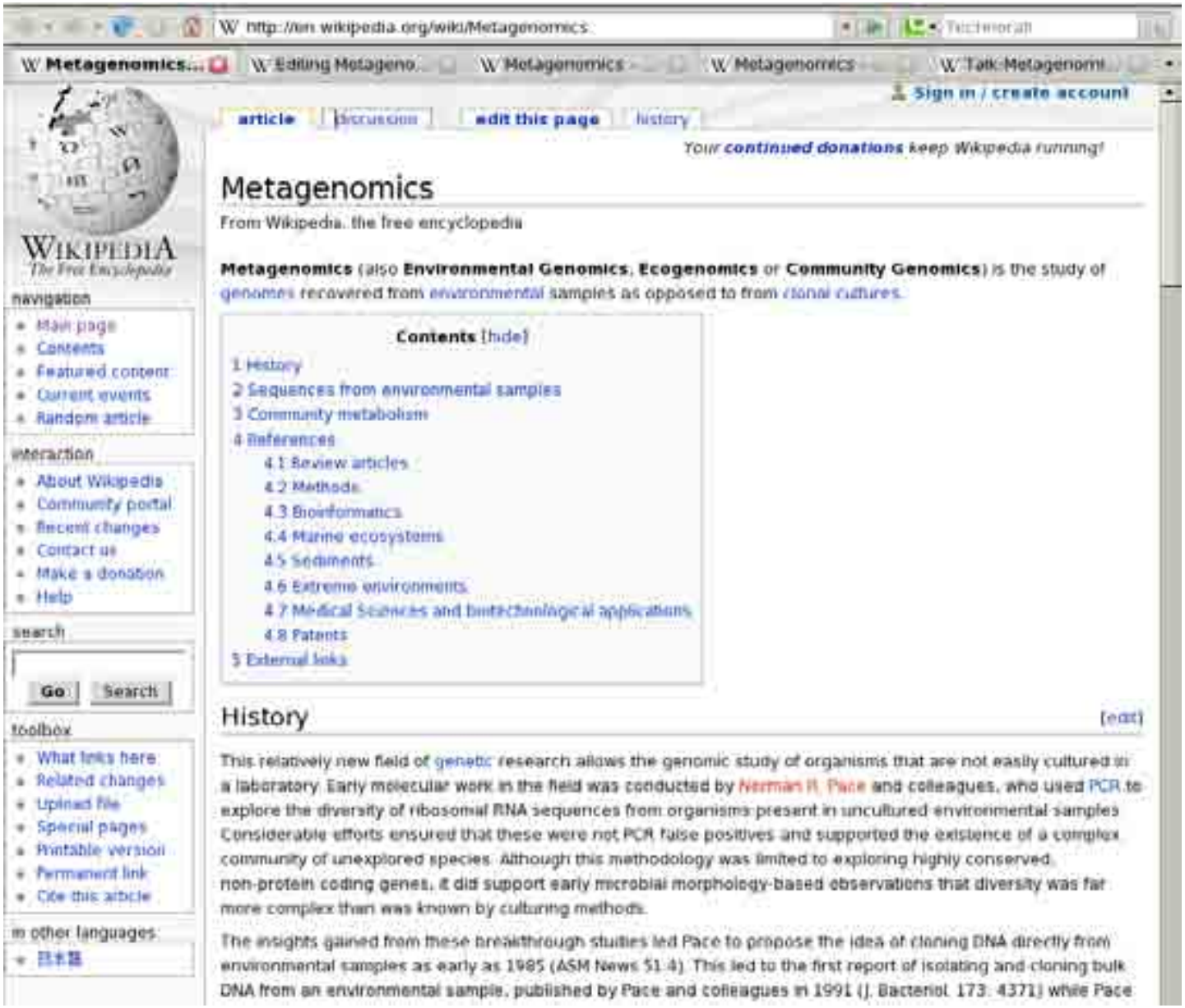
... but I will focus on two topics.

Wikis – Knowledge management made easy

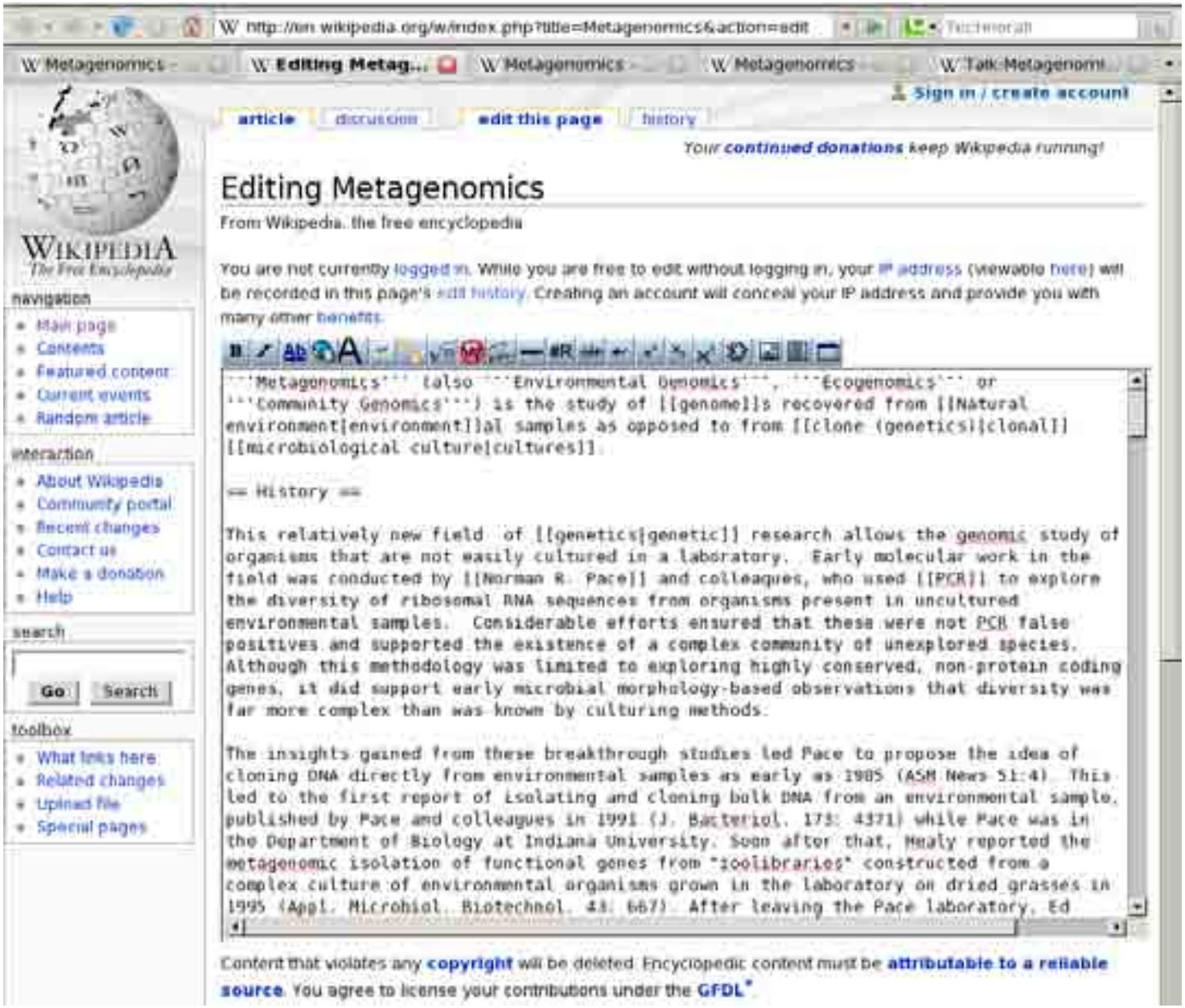
What's a wiki

- *wiki wiki* – hawaiian for *quick*
- When Tim Berners-Lee invented the WWW he thought about a web everybody can edit - wikis are exactly that
- Create/change/delete web pages online
- All versions are kept and can be recovered/compared
- Contributions of users can be determined

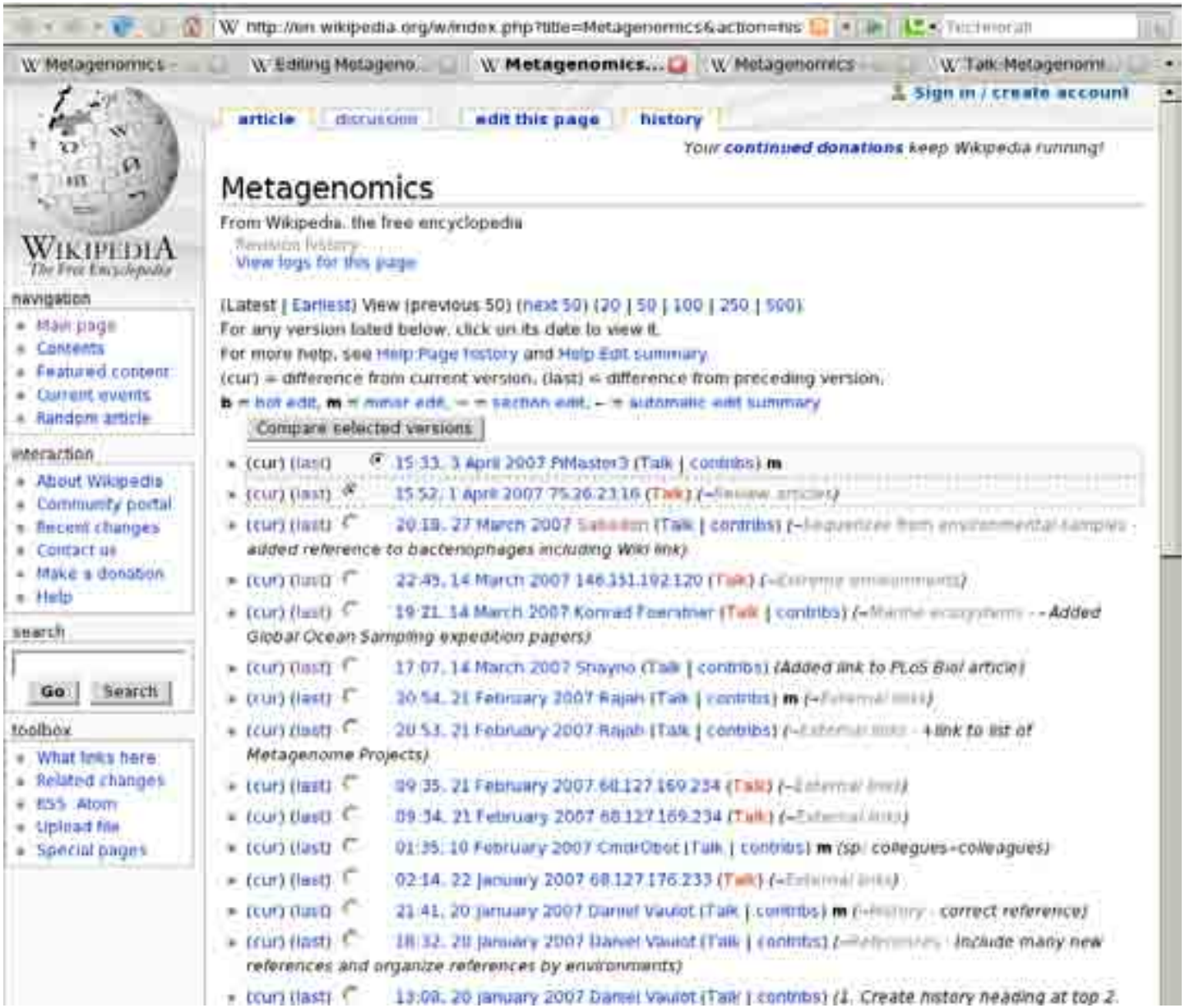
Wiki features – Viewing a document



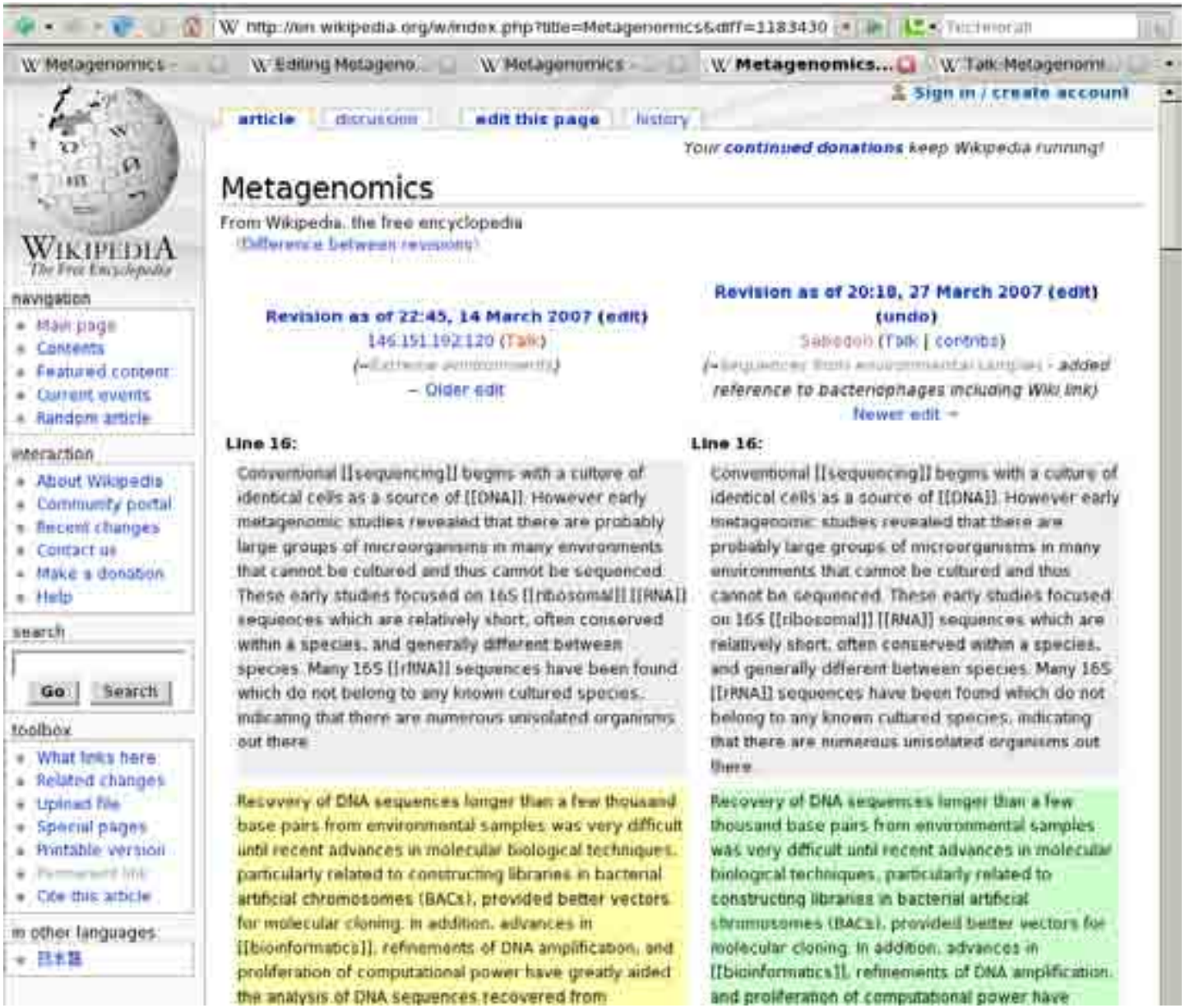
Wiki features – Editing



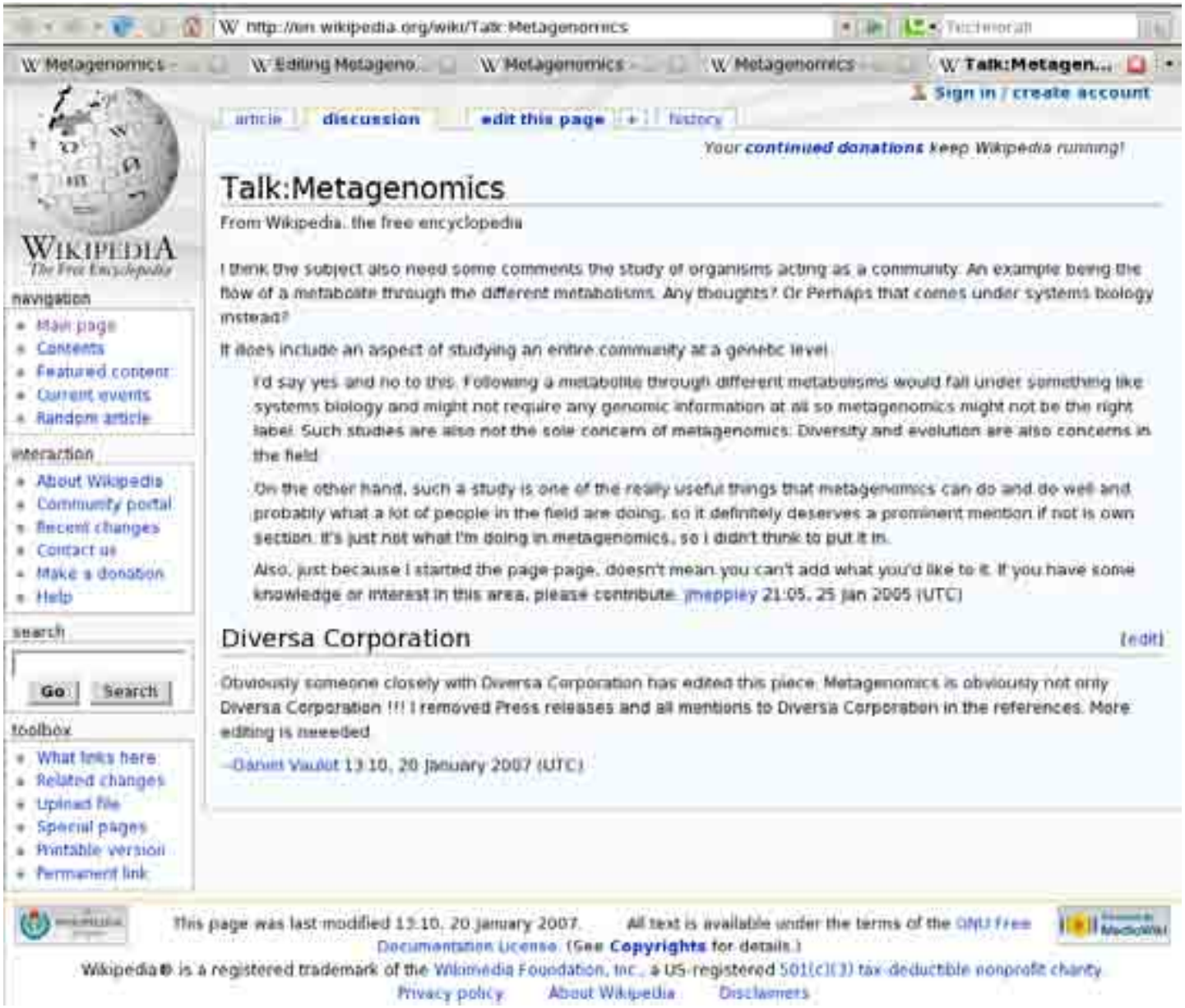
Wiki features – History of versions



Wiki features – Comparing versions



Wiki features – Discussion



Applications of wikis

Collaborative organising/writing of ...

- ... all kinds of knowledge (Wikipedia)
- ... books (Wikibooks)
- ... labs/collaborations
- ... communities/projects
- ... documentations/manuals/how-tos
- ... conferences (barcamps)
- ... documents like papers, grants, patents, business plans etc.
- ... do I have to go on?

OpenWetWare – Sharing life science lab information

Plastics Wiki – Information about plastic science

WikiProteins – A semantic web wiki for protein annotation

Potentials and Challenges

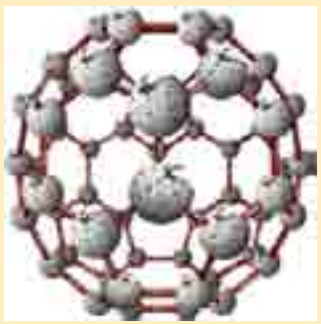
To solve/consider

- Quality
- Motivate people / critical mass
- References
- Identity vs. Privacy
- Credits
- Licenses

Potentials and Challenges

Future

- More Semantic Web under the hood ("web of data")
- More functionality (e.g. mind mapping)
- Wiki-Science as proposed by Kevin Kelly
  - "Paper" as wiki
  - Constantly improving
  - Many contributors
  - *Wiki-science will often be the first word on a new area. Some researchers will specialize in refining ideas first proposed by wiki-science.*



Online conferences

Why?

Talks/Conferences are an excellent way of communicating science, but usually reach only a small audience.

Advantages of online conferences

- Broader audience can be reached
- Cheaper
- Fewer time restrictions
- Save fuel and avoid CO_2-emissions

Online conferences

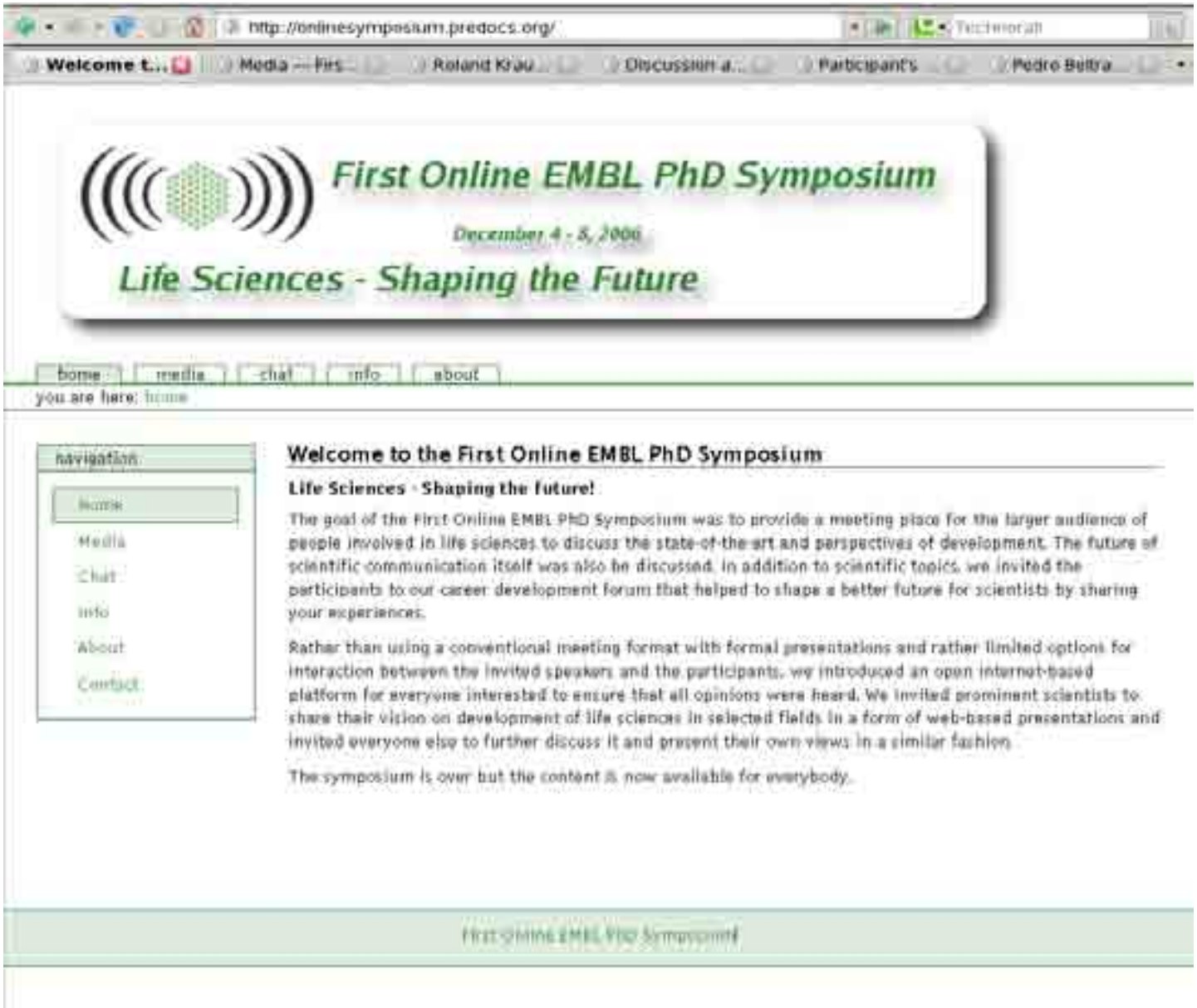
Why?

Talks/Conferences are an excellent way of communicating science, but usually reach only a small audience.

Advantages of online conferences

- Broader audience can be reached
- Cheaper
- Fewer time restrictions
- Save fuel and avoid CO_2-emissions

An example - First Online EMBL PhD Symposium

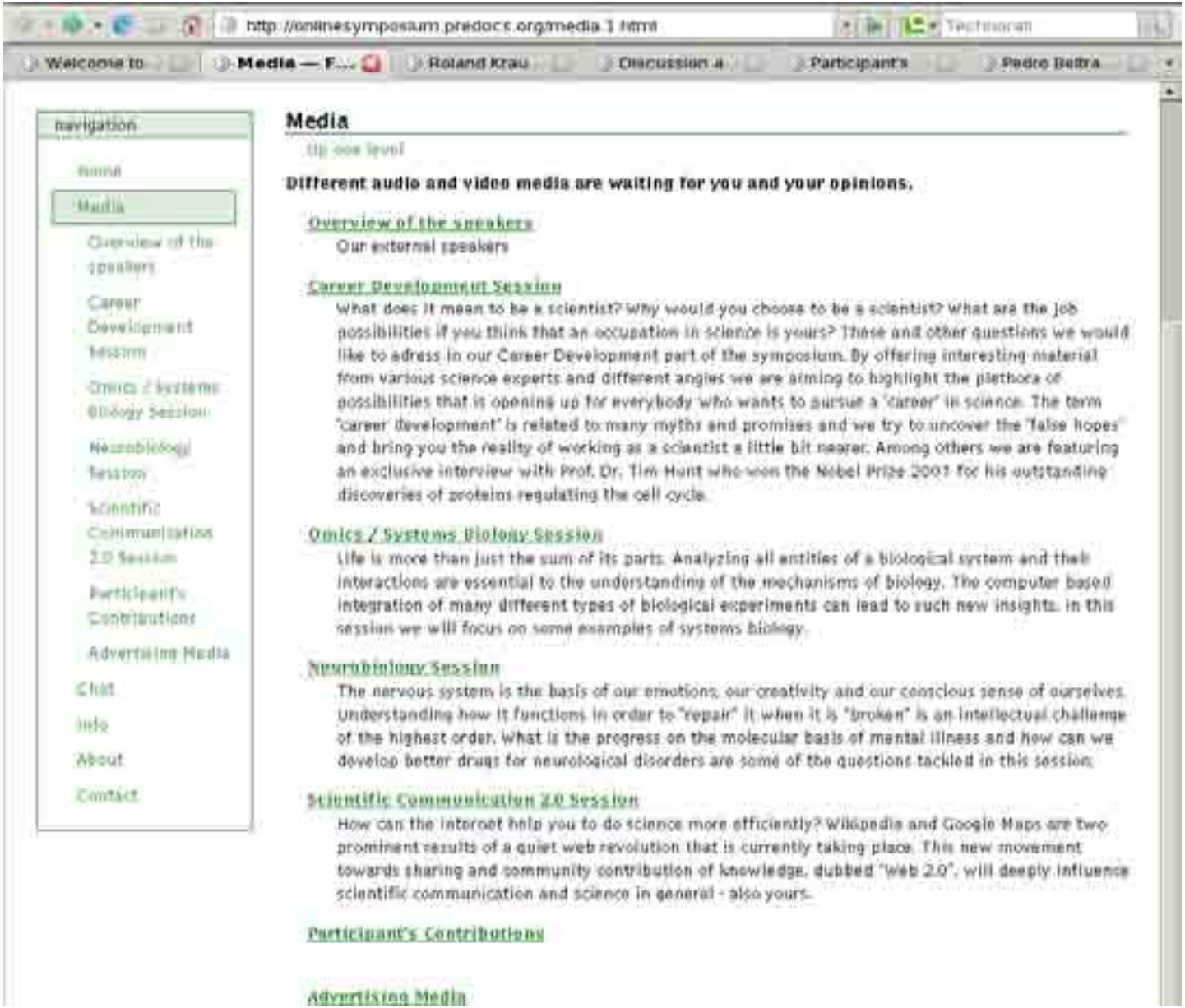


An example - First Online EMBL PhD Symposium

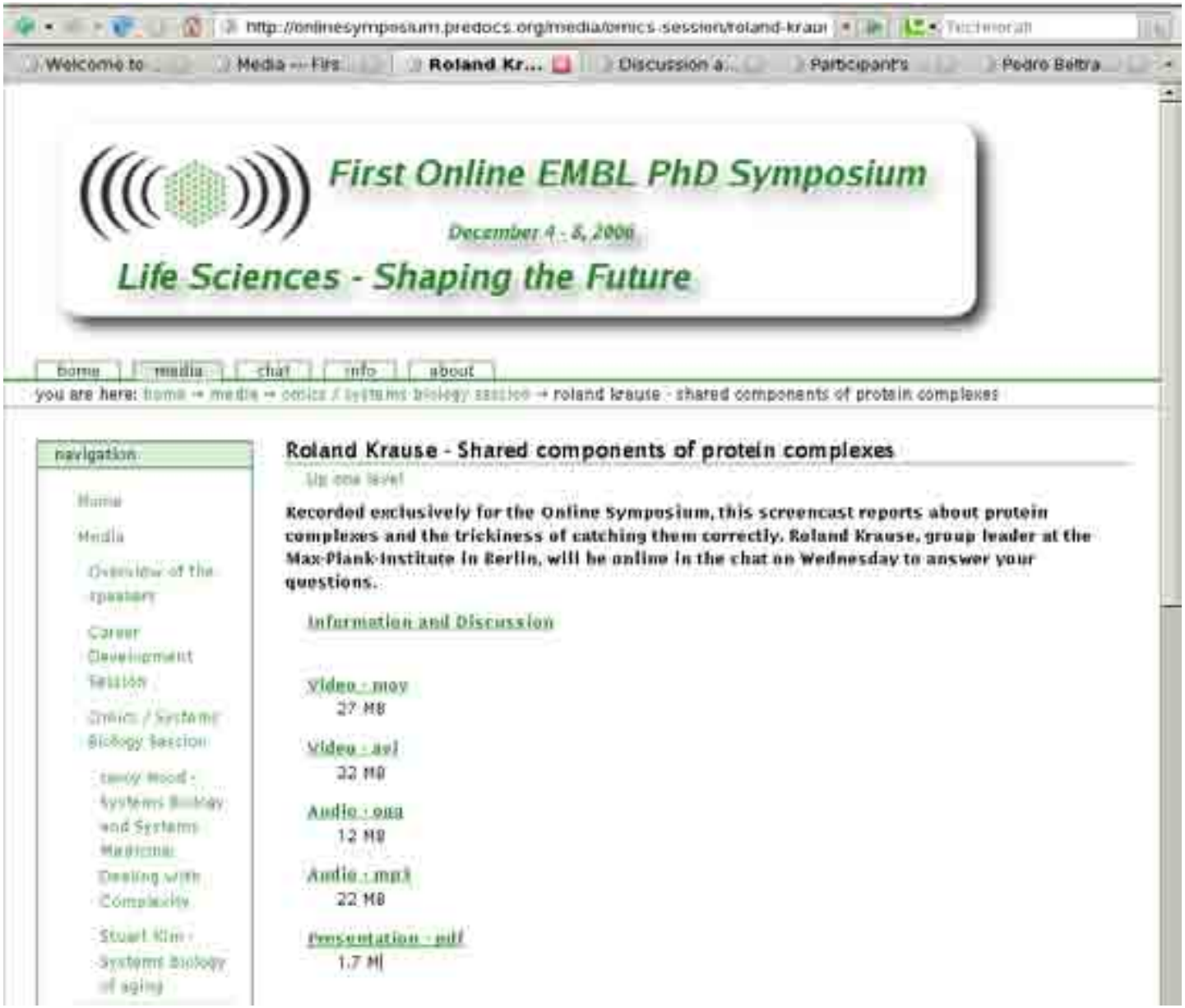
Facts

- Open for 5 days to registered participants; after that media available without restrictions
- Video, audio, presentation files
  - 14 pre-recorded talks
  - 2 pre-recorded interviews
  - 1 panel discussion
  - 1 talk discussion
- Participants could contribute by commenting on talks, in chats and with their own media.
- Implemented using the Plone CMS

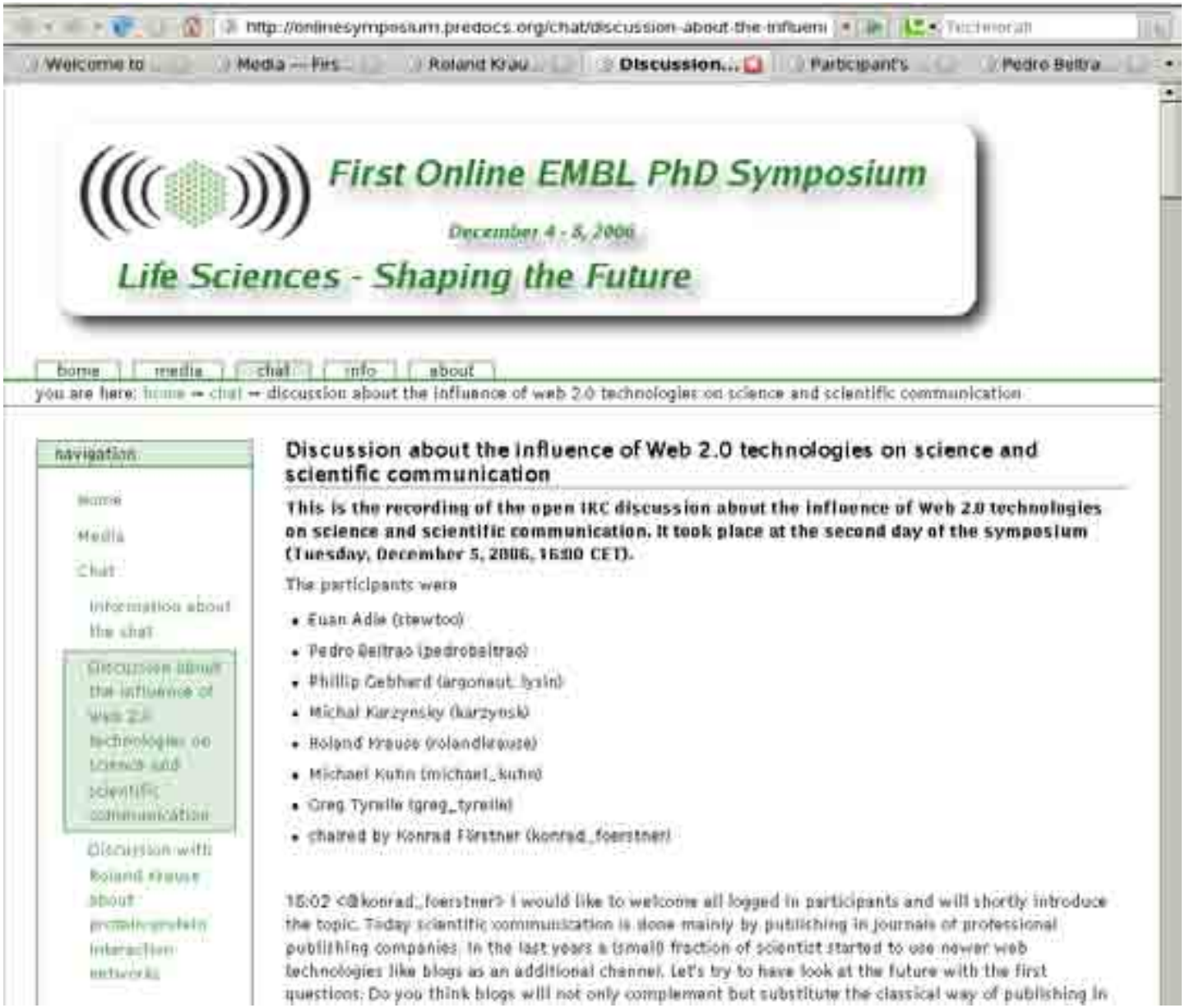
Sessions


http://onlinesymposium.predocs.org/media.1.html
Welcome to
Media — F...
Roland Krau
Discussion a
Participant's
Pedro Beltra
navigation
home
Media
Overview of the speakers
Career Development Session
Omics / Systems Biology Session
Neurobiology Session
Scientific Communication 2.0 Session
Participant's Contributions
Advertising Media
Chat
Info
About
Contact
Media
Up one level
Different audio and video media are waiting for you and your opinions.
Overview of the speakers
Our external speakers
Career Development Session
What does it mean to be a scientist? Why would you choose to be a scientist? What are the job possibilities if you think that an occupation in science is yours? These and other questions we would like to adress in our Career Development part of the symposium. By offering interesting material from various science experts and different angles we are aiming to highlight the plethora of possibilities that is opening up for everybody who wants to pursue a "career" in science. The term "career development" is related to many myths and promises and we try to uncover the "false hopes" and bring you the reality of working as a scientist a little bit nearer. Among others we are featuring an exclusive interview with Prof. Dr. Tim Hunt who won the Nobel Prize 2001 for his outstanding discoveries of proteins regulating the cell cycle.
Omics / Systems Biology Session
Life is more than just the sum of its parts. Analyzing all entities of a biological system and their interactions are essential to the understanding of the mechanisms of biology. The computer based integration of many different types of biological experiments can lead to such new insights. In this session we will focus on some examples of systems biology.
Neurobiology Session
The nervous system is the basis of our emotions, our creativity and our conscious sense of ourselves. Understanding how it functions in order to "repair" it when it is "broken" is an intellectual challenge of the highest order. What is the progress on the molecular basis of mental illness and how can we develop better drugs for neurological disorders are some of the questions tackled in this session.
Scientific Communication 2.0 Session
How can the internet help you to do science more efficiently? Wikipedia and Google Maps are two prominent results of a quiet web revolution that is currently taking place. This new movement towards sharing and community contribution of knowledge, dubbed "Web 2.0", will deeply influence scientific communication and science in general - also yours.
Participant's Contributions
Advertising Media

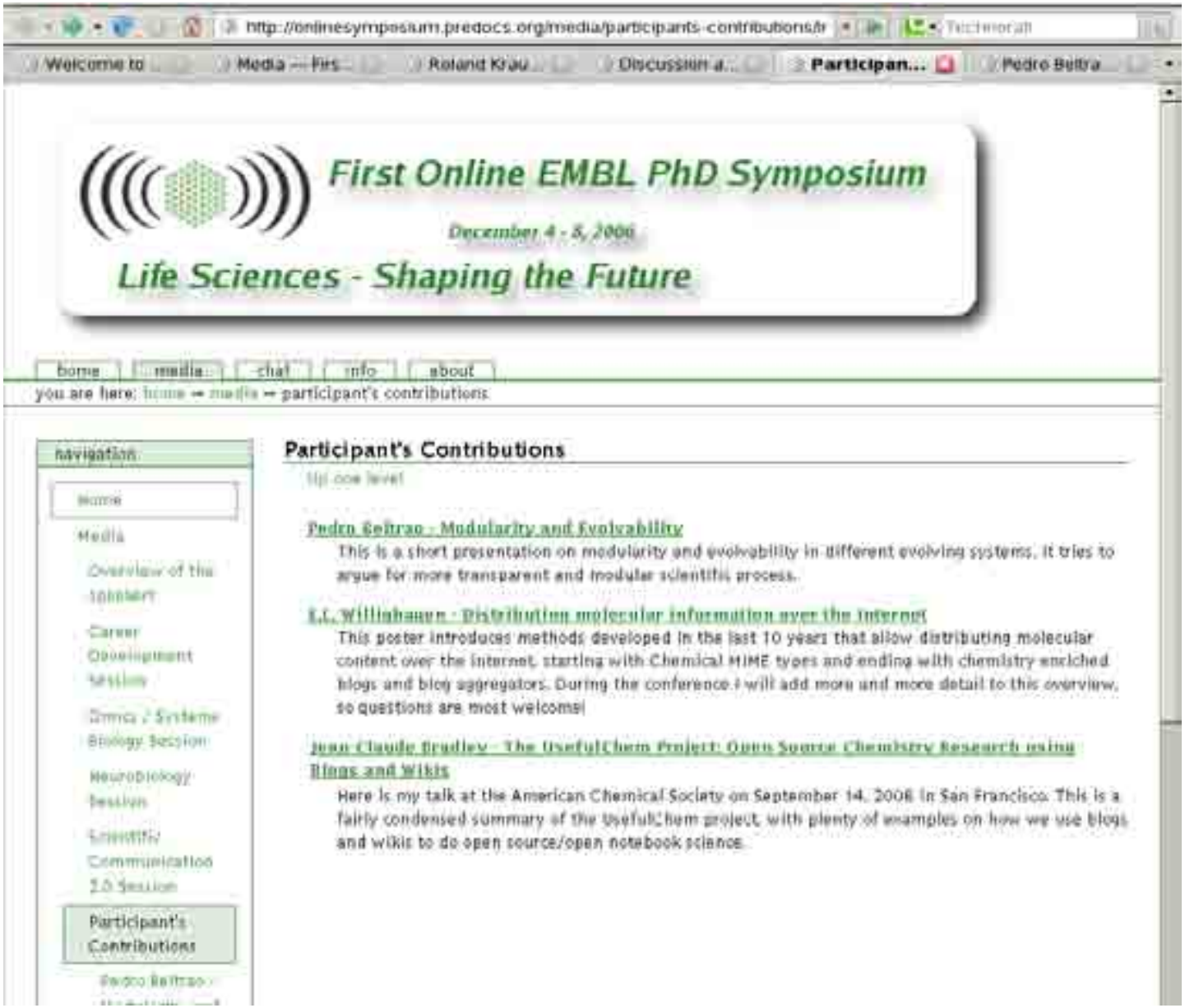
Talks


First Online EMBL PhD Symposium
December 4 - 5, 2008
Life Sciences - Shaping the Future
home
media
chat
info
about
you are here: home » media » roland krause - shared components of protein complexes
navigation
Home
Media
Roland Krause - Shared components of protein complexes
Recorded exclusively for the Online Symposium, this screencast reports about protein complexes and the trickiness of catching them correctly. Roland Krause, group leader at the Max-Planck-Institute in Berlin, will be online in the chat on Wednesday to answer your questions.
Information and Discussion
Video : mov
27 MB
Video : avi
22 MB
Audio : ogg
12 MB
Audio : mp3
22 MB
Presentation : pdf
1.7 MB

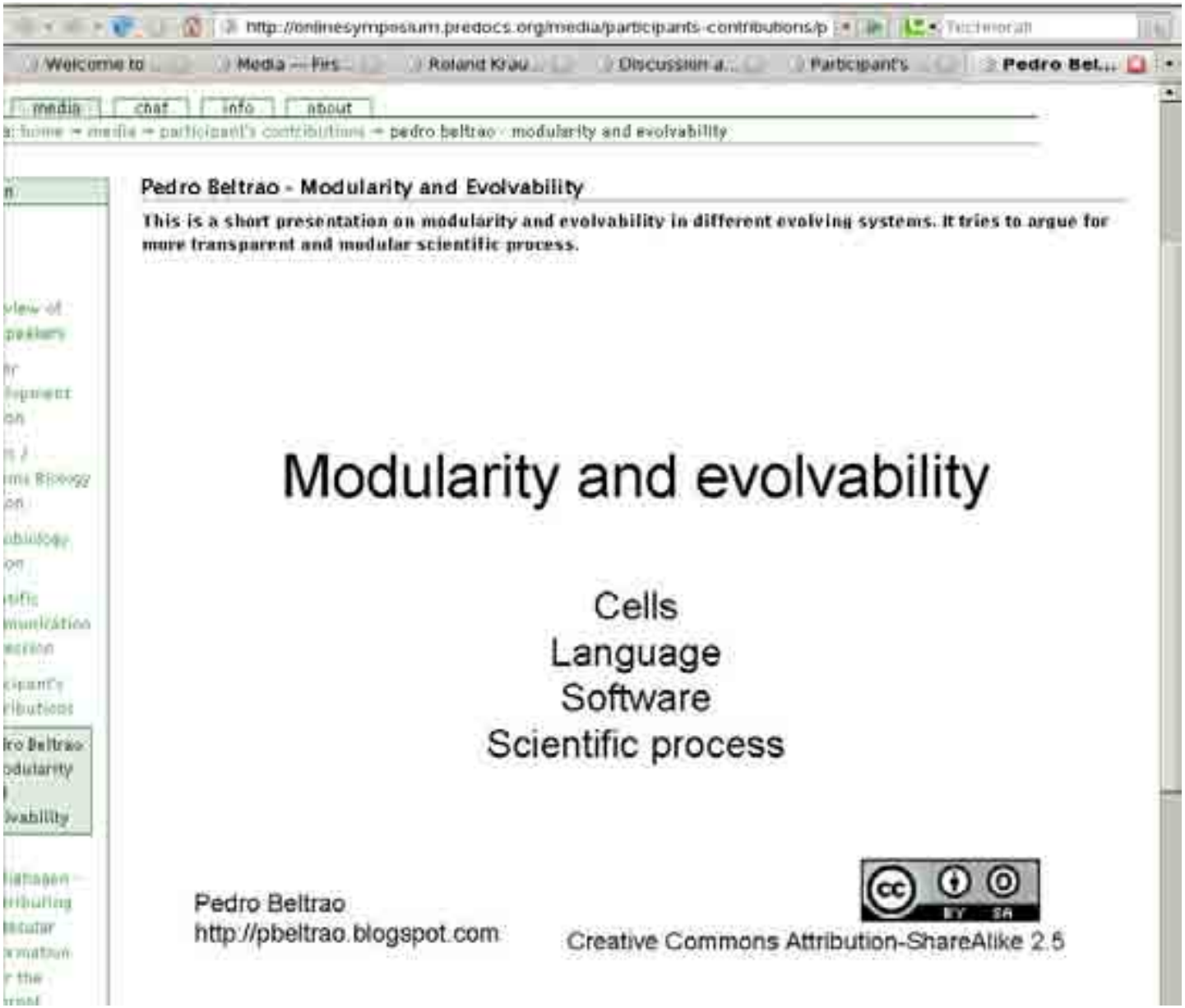
Panel discussion



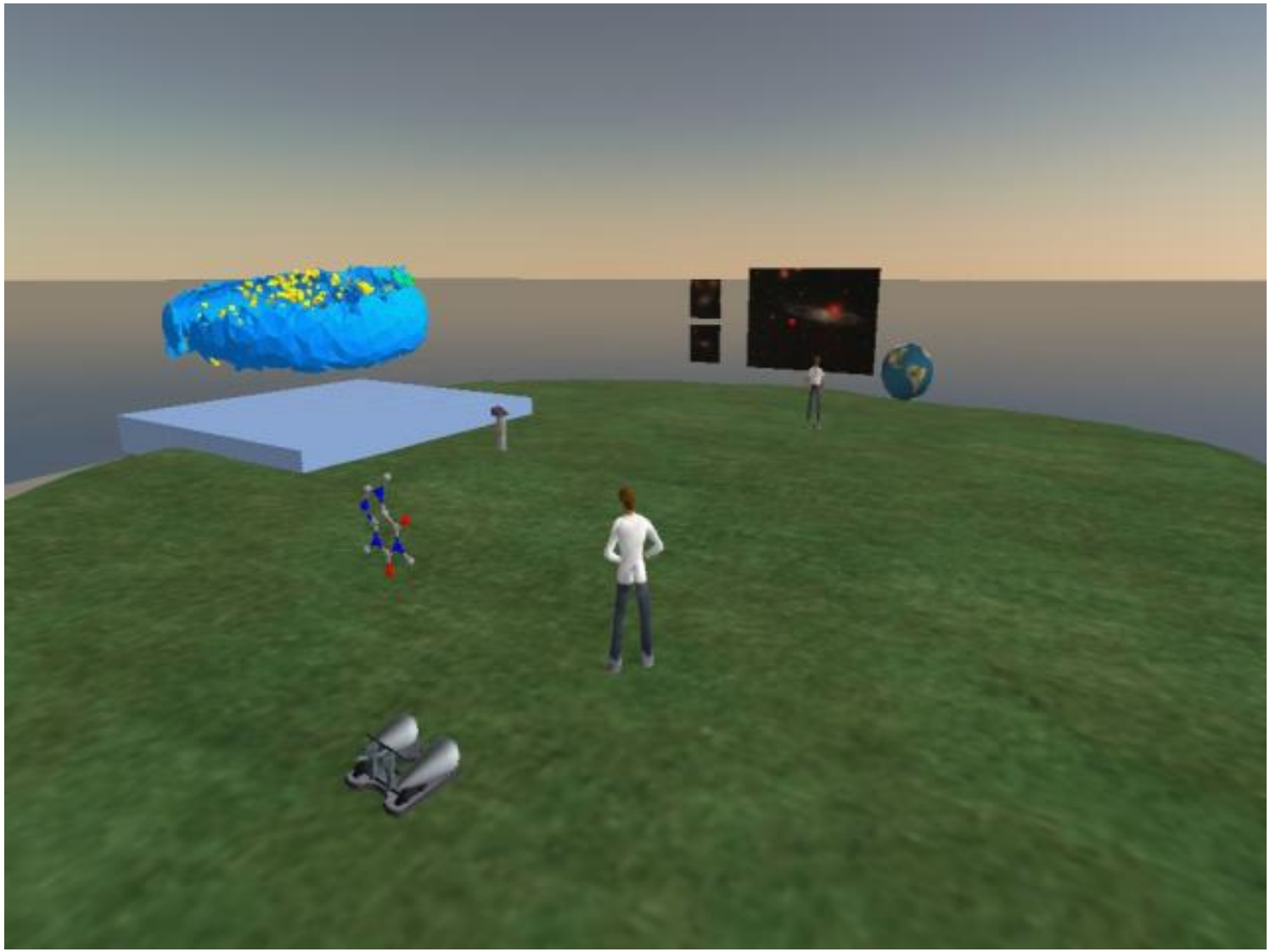
Poster session



Poster session



Wine and Cheese session



Hanging out at *Nature*'s Second Life island *Second Nature*

Lessons learned

- Hard to find people willing to give a talk
  - uncomfortable with the high accessibility (esp. for unpublished data).
  - Too techy?
  - No free trip
- Many participants but most were passive
- Very positive feedback from participants

$\Rightarrow$ Makes sense if you want to reach many people

$\Rightarrow$ Maybe use a hybrid approach

Alternative approaches

If you want to do this with less hassle

- Use (free) hosted web services
  - Blog
  - Video/Audio/Slide sharing platforms
  - IRC/XMPP server
  - Disadvantage
    - less customizeable
    - not everything under one roof
- May be soon included in social network software

Take home messages

- Web 2.0 has a deep impact on scientific communication and collaboration
- Wikis are excellent for collaborative work
- Online conferences are a cheap way to reach a broad audience
- To solve/consider: manpower, quality, identity, credits
- Future: More functions and semantic web technologies used

Thanks for your attention.

Any questions?

The presentation slides are available on my web site:

http://konrad.foerstner.org


BASECAMP
BACKPACK
CHALK.IT
REMEMBERTHEMILK
WRITEBOARD
TADALIST
GOOGLE MAPS
KIKO
WRITELEY
GTD
GMAIL
GOOGLE RSSREADER
GOOGLE IG
UNWIELDY
TAGTAGGER
TAGGLING
CLOUDALICIOUS
WIKIPEDIA
Focus on Simplicity
ZIMBRA
MEEBO
PROTOPAGE
TAGCLOUD
Wikis
ZOOZIO
FLOCK
DELICIOUS
WIDGETS
Joy of Use
NETVIBES
STUMBLEUPON
FLICKR
COLLABORATION
LIVE.COM
Folksonomy
SHARING
AJAX
43THINGS
DIGG
SQUIDOO
Usability
PAGERANK
FLICKR
NING
EBAY
Recommendation
USER CENTERED
BLINKSALE
FOTOLIA
ETSY
SOFLOW
LINKEDIN
FOAF
PERPETUAL BETA
OPENBC
ORKUT
Social Software
SIXDEGREES
The Long Tail
EBAY
UPCOMING
FRIENDSTER
XFN
Participation
TRUST
Economy
PAYPAL
PLANZO
BLOGGER
Blogs
AMAZON
MTURK
AGGREGATION
VC
ITUNES
TYPEPAD
TECHNORATI
Affiliation
WORDPRESS
MINT
Web2.0
beta
LASTFM
READ.IO
MEASUREMAP
COSTPERCLICK
ADSENSE
IPODDER
PODCASTING
IM
PANDORA
Audio
ODEO
SKYPE
GTALK
JABBER
LIVELINESS
SIMPLEBITS
Convergence
ITUNES
DATA INSIDE
SEO
Design
VIMEO
Video
VIDEOCASTING
BIT TORRENT
GRANULARITY
STYLEGALA
YOUTUBE
MODULARITY
SIMPLICITY
9RULES
CASTPOST
WIFI
Mobility
UMTS
SYNDICATION
Remixability
CSSBEAUTY
GOOGLE MAPS
SOAP
REST
RUBYONRAILS
XML
CREATIVECOMMONS
A9
PLAZES
RSS
Standardization
ZENGARDEN
YAHOO MAPS
OpenAPIs
TAGCLOUD
SEMANTIC
CSS-Design
NEWSGATOR
BLOGLINES
AMAZON
DataDriven
XHTML
ACCESSIBILITY
WASP
FEEDSTER
ROJO
GOOGLE MAPS
Web Standards
ALISTAPART
FEEDBURNER
GMAPS MASHUPS
TECHNORATI
MYYAHOO
GOOGLE NEWS
FIREFOX
GOOGLE
A9
ICEROCKET
Microformats
BUZZTRACKER
INORDER
WINK
ALEXA
MICROFORMATS.ORG
ROLLYO
TRENDMAPPER
PUBSUB
RELEASED UNDER CC 2.0 DE ATTRIBUTION SHARE ALIKE 11.11.05
MARKUS.ANGERMEIER @ APERTO.DE

References and Sources

Reference

http://wikipedia.org
http://en.wikipedia.org/wiki/RSS_(file_format)
http://network.nature.com
http://www.xing.com
http://del.icio.us
http://www.hubmed.org
http://www.postgenomic.com
http://microformats.org
http://www.blogger.com
http://openwetware.org
http://plastics.inwiki.org/Main_Page
http://www.wikiprofessional.info
http://www.edge.org/3rd_culture/kelly06/kelly06_index.html
http://onlinesymposium.predocs.org
http://plone.org
http://blogs.nature.com/wp/nascent/2006/10/berkman_second_nature_and_the.html

Image sources

The School of Athens – http://commons.wikimedia.org/wiki/Image:Sanzio_01_Plato_Aristotle.jpg
Spider Web – http://commons.wikimedia.org/wiki/Image:Water_drops_on_spider_web.jpg
Wiki Wiki – http://commons.wikimedia.org/wiki/Image:WikiWiki.jpg
Ants – http://commons.wikimedia.org/wiki/Image:Oecophylla.jpg
Marmot warning – http://commons.wikimedia.org/wiki/Image:WarningMarmotAustria.JPG
Terracota army – http://commons.wikimedia.org/wiki/Image:Xian_guerreros_terracota_detalle.JPG
Japanese Classroom – http://commons.wikimedia.org/wiki/Image:JapaneseClassroom.jpg
Hammock – http://www.flickr.com/photos/emzee/139794246/
Web2.0 – extended mindcloudmap - http://flickr.com/photos/kosmar/62381076/

About this document

Created in LaTeX using the *beamer* class, pdfLaTeX and *emacs*.
Gimp and firefox were used to take screen shots of websites.
All these programs run on *OpenBSD*.

`http://www.latex-project.org`
`http://latex-beamer.sourceforge.net`
`http://www.tug.org/applications/pdftex`
`http://www.gnu.org/software/emacs`
`http://www.mozilla.com/en-US/firefox/`
`http://www.gimp.org/`
`http://www.openbsd.org`

Document version 1.0 2007/04/12