Open Data for Open Astronomy

Yan Xu, Ph.D.
Senior Research Program Manager at Microsoft Research
Microsoft Corporation
yanxu@microsoft.com

Microsoft Research at IAU2012, booth #46

Microsoft Research (MSR)

http://research.microsoft.com

- Founded in 1991
  - Staff of 1000+ in 60+ disciplines
- Internationally recognized research teams
- A "Safe house" for incubating technologies/ideas
  - Computer Science
  - Computational Science, eScience
- A environment for research collaboration
  - Sabbaticals, Post-docs , interns
  - University Relations
  - External Research

Open Data for Open Science

Vision:

Facilitate seamless access to data and information for scientists

Focus: data discoverability, accessibility, and consumability

Objectives:

- Advance the technology use in data-intensive sciences
- Create design wins using Microsoft technologies to
  - Foster innovations in computational science research
  - Advance interoperability of data and information sharing
  - Bridge the gaps between research and education
- Enhance connections among multiple disciplines and stakeholders

WorldWide Telescope – a giant testcase

Astronomy in ~10 years ago

- Sloan Digital Sky Survey – mapping the universe
  - Influential in astronomical history
  - Dedicated instruments to image 1.5 square degrees of sky at a time
  - Petabytes of data …
- Problems:
  - vast amount of heterogeneous data (petabytes)
  - limited use of data
- Solution: Virtual Observatories (VO)
  - Allows transparent and distributed access to data worldwide
  - Enables interoperability standards development
  - Facilitates user-friendly tools development
- From Microsoft: the **WorldWide Telescope (WWT)**

The SDSS Telescope

"WWT is a realization of VO" - Ajit Kembhavi, Director of IUCAA

WorldWide Telescope

http://www.worldwidetelescope.org/

- A visualization software environment
  - Enables your computer to function as a virtual telescope
- A one-stop research/education platform:
  - Aggregate data and information from major telescopes, observatories, and institutions.
  - Make temporal and multi-spectral studies available through a single cohesive Internet–based portal
  - Enhance the connections among professional astronomers, science educators, and the amateurs.
  - Facilitate historical and cultural astronomy research
  - User interface in local languages
- It is free for academia

WWT for Astronomical Research and Education

Seamless Astronomy

- Project Website: http://projects.iq.harvard.edu/seamlessastronomy/
- Multiple innovative interdisciplinary research projects

WorldWide Telescope (WWT)

WorldWide Telescope provides a rich contextual visualization environment for astronomical data. Our group collaborates with the WWT Team at Microsoft Research both to enrich WWT for use in research as well as in teaching. On the research end, we seek to integrate WWT "Seamlessly" with **VAO**–sponsored projects, as well as with ADS Labs. On the teaching end, we founded and now run the **WorldWide Telescope Ambassadors** outreach effort.

https://wwtambassadors.org/wwt/

WWT for Astronomical Research and Education

AstroInformatics2012, hosted by Microsoft Research

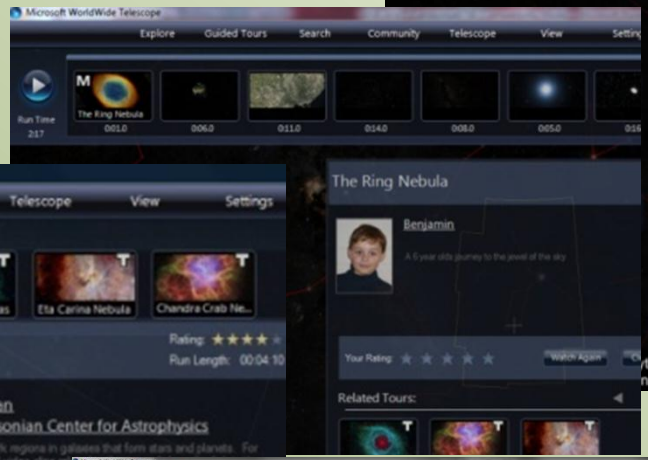
http://www.astro.caltech.edu/ai12/

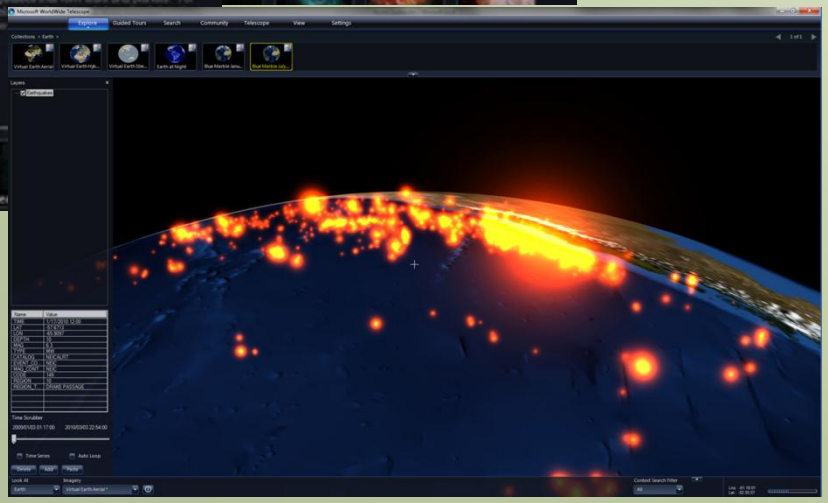
Day-4: 20 Scenarios for Connecting Research with Education

WWT for Astronomical Research and Education

Guided Tours – the most loved feature of WWT

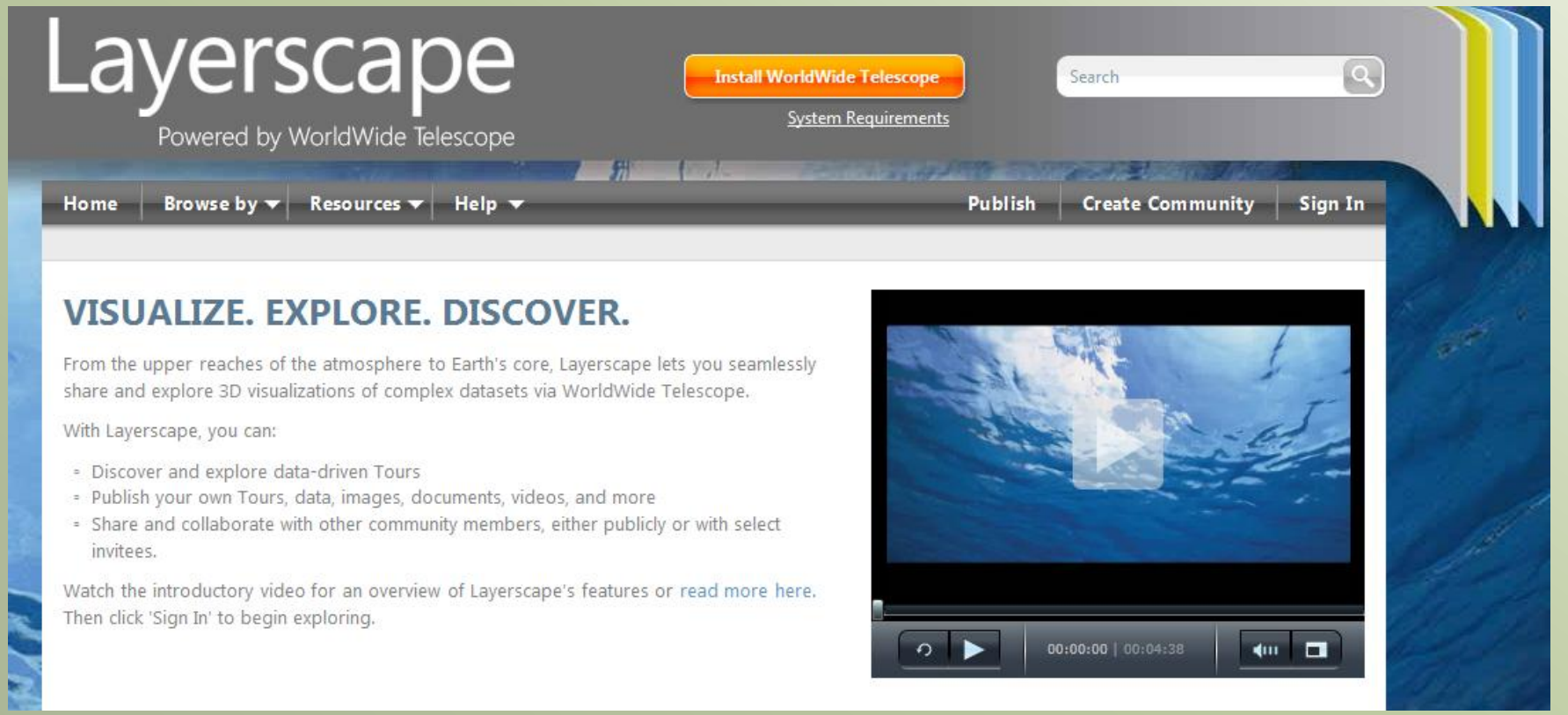
- Interactive story-telling
- Visual wiki
- Narratives of cultural heritage
- Spatiotem





WWT for Astronomical Research and Education

Share data and knowledge: http://www.layerscape.org/



WWT for Astronomical Research and Education

Regional Communities

- e.g. WWT Community Beijing: http://wwt.china-vo.org/home.htm
- Train the trainers: WWT Teachers Workshops
- Connection research, education, and cultural heritage
- National WWT Tours competitions
- Building the best WWT/VO ambassadors

WWT for Astronomical Research and Education

Related Links:

- Free WWT download: http://www.worldwidetelescope.org
- Layerscape: http://www.layerscape.org
- Microsoft Research: http://research.microsoft.com
- Kinect for Windows: http://www.microsoft.com/kinectforwindows/
- WWT Ambassadors Program: https://wwtambassadors.org/wwt/
- WWT Community Beijing: http://wwt.china-vo.org/home.htm
- AstroInformatics2012: http://www.astro.caltech.edu/ai12/

Contact Us: wwt-ap@microsoft.com

Thank you!