

Scenarios of Use

Discover the Cosmos

Cosmos, Atlas@Cern



Topics, Subjects:

Physics, Astronomy, Astrophysics, Mathematics

Overview of the presentation

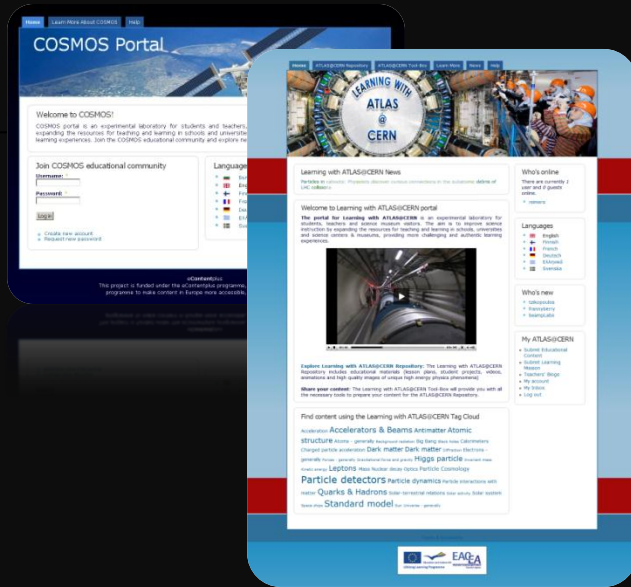
- 1) Which materials are available?
- 2) Connex to curriculum
- 3) Strategy for implementation in schools
- 4) Wie werden die Materialien im Unterricht eingesetzt?
- 5) Adaption von Lernpfaden/-zenarien, Lernobjekten für den Einsatz im Unterricht
- 6) Zielgruppe
- 7) Zeitplan

Which materials are available?

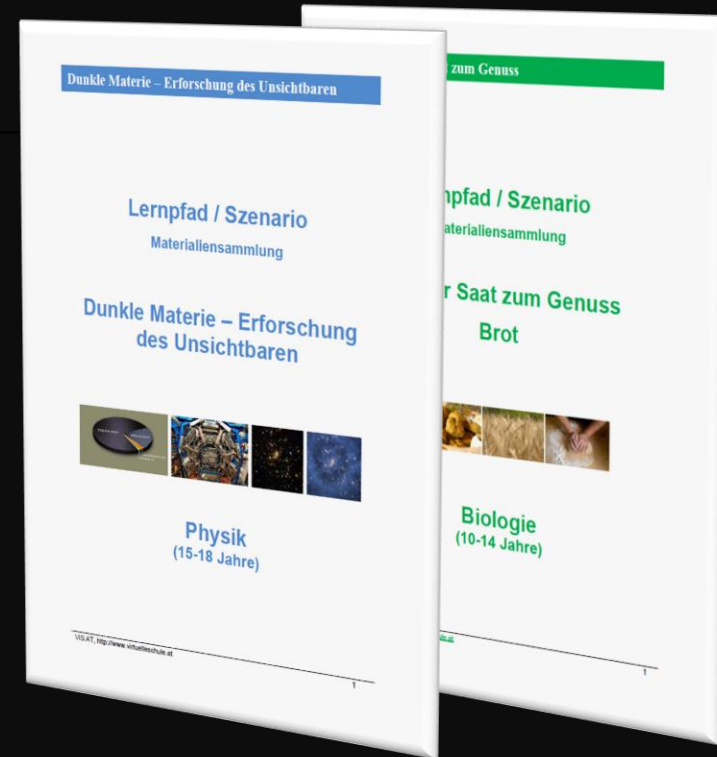
Available Materials:

- Scenarios / Pathways / Material collections
- Interactive working booklets
- Mobile applications
- Moodle course
- Educational repositories
- Second Life

e-Learning Portale



Material Collections



<http://www.cosmosportal.eu>
<http://www.learningwithatlas-portal.eu>
<http://www.osrportal.eu>
etc.

<http://www.virtuelleschule.at/lernpfade>

Scenarios of Use: Topics

Astrophysics (Cern) - Mobile

1. LHC - Large Hadron Collider
2. ATLAS
3. Particle Physic
4. High Energy Physics
5. Quantum Physics
6. The Standard Model
7. Particle Accelerators
8. Partcile Collision
9. The Matter
10. Fundamental Particles
11. Mass
12. Forms of Energy
13. Wave Particle Duality
14. Cosmic Rays
15. Big Bang
16. Black Holes
17. Albert Einstein
18. Stephen Hawking

Astronomy (Cosmos) - Mobile

1. Big Bang
2. Black Holes
3. Cern
4. Comets
5. Development
6. Earth
7. Galaxies
8. Jupiter
9. Mars
10. Mercury
11. Meteors
12. Moon
13. Neptune
14. Universe
15. Planets
16. Satellites
17. Saturn
18. Solar System
19. Stars
20. Sun
21. Uranus
22. Venus
23. Zodiacs / Starry Sky

Interactive working booklets (in German)

1. Dunkle Materie [Arbeitsheft]
2. Extrasolare Planeten [Arbeitsheft]
3. Meteoriteneinschläge [Arbeitsheft]
4. Erdmond [Arbeitsheft]
5. Lichtverschmutzung [Arbeitsheft]
6. Cosmic Velocities (Kosmische Geschwindigkeiten) [Arbeitsheft]
7. Sonnenfinsternis [Arbeitsheft]
8. Experimentelle Sternenbeobachtung
9. COSMOS Flypen: Sonnensystem [Arbeitsheft]
10. COSMOS Spacedriver
11. COSMOS Magic 3D Book
12. COSMOS MoCo - Mobil
13. COSMOS New Frontiers
14. COSMOS XO "LÜK" Learning Applikation
15. Sonstige Lernobjekte (keinem Szenario zugeordnet)

Mobile Applications: Cosmos & Atlas

Discover the Cosmos

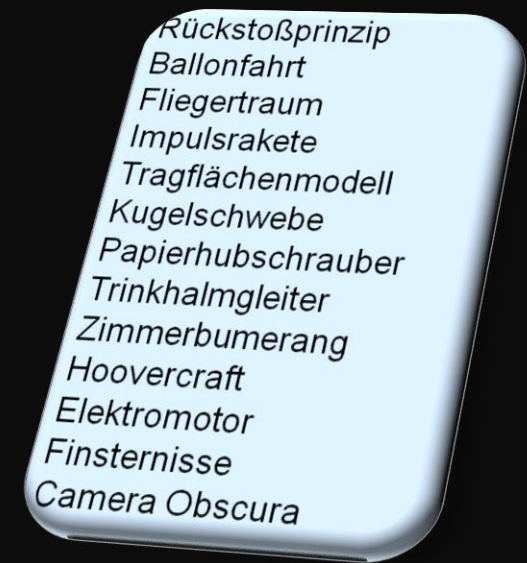
Cosmos, 18 Module
ab 12 Jahre
Astronomie, Physik



Atlas@Cern, 23 Module
ab 15 Jahre
Astrophysik, Physik, Mathematik



moX – 13 Module
ab 12 Jahre
Physik



<http://www.virtuelleschule.at/mobil>

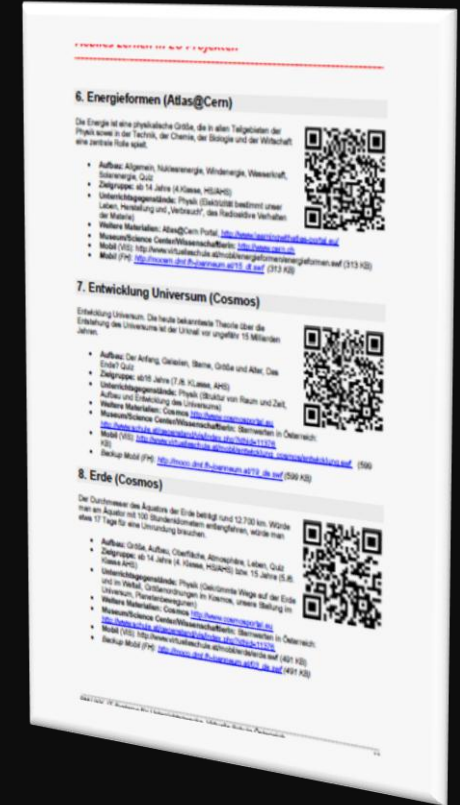
Mobile Applications: Cosmos & Atlas



Booklet for printing

- Was ist mobiles Lernen?
- Wie wende ich mobiles Lernen im Unterricht an?
- Technische Grundlagen
- Themenliste plus Altersangabe der SchülerInnen
- Datensätze mit QR Codes

<http://www.virtuelleschule.at/mobil>



2

Von der Nebelkammer zu ATLAS

Entwicklung der Teilchen-Detektoren:

Historische Spurdetektoren:

- Nebelkammer (Cloud Chamber)
- Funkenkammer (Spark Chamber)
- Blasenkammer (Bubble Chamber)

Größte Blasenkammer **BEBC** "**B**ig **E**uropean **B**ubble **C**hamber", CERN:
http://en.wikipedia.org/wiki/Big_European_Bubble_Chamber (englisch)

Blasenkammer Gargamelle, CERN: <http://de.wikipedia.org/wiki/Gargamelle>

Spurendetektoren mit Gas:

- Ionisationszähler (Geiger-Müller-Zähler)
- Proportionalkammer
- Vieldrahtproportionalkammer
- Driftkammer
- Zeitprojektionskammer
- Mikro-Streifen-Gasdetektoren
- Resistive Plate Chambers

Halbleiterdetektoren mit Silizium:

- Streifenzähler
- Silizium-Pixel-Sensoren
- Silizium-Drift-Sensoren: DepFET, CCD, CMOS

Kalorimeter (Energiesensoren):

- ECAL (Elektromagnetisches Kalorimeter): Elektronen und Photonen
- HCAL (Hadronisches Kalorimeter): Hadronen: Mesonen (z.B. Pionen); Baryonen (z.B. Protonen)



□

<http://www.virtuelleschule.at/moodle>

3

CERN und LHC

CERN ... französische Abkürzung "**C**onseil **E**uropéen pour la **R**echerche **N**ucléaire", auf Deutsch übersetzt "**E**uropäische **O**rganisation für **K**ernforschung" und in Englisch "**E**uropean **O**rganization for **N**uclear **R**esearch"

mehr zu CERN als mobile Applikation unter:

1. <http://www.virtuelleschule.at/mobil/cern/cern.swf> (270 KB)
2. http://www.virtuelleschule.at/mobil/cern_cosmos/cern.swf (520 KB)



□

Multilingual repositories: Cosmos & Atlas@Cern

Discover the Cosmos

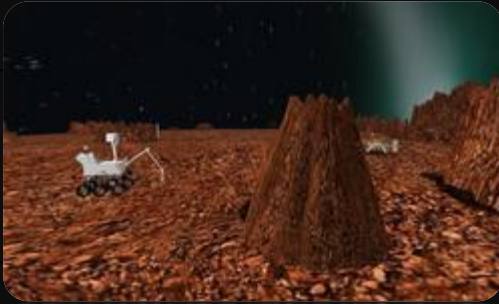


COSMOS bietet ca. **80.000** elektronische Lernmaterialien zum Thema **Astronomie, Physik, Mathematik**, für den Unterricht an. Cosmos Portal: <http://www.virtuelleschule.at/cosmos>
Portal: <http://www.cosmosportal.eu>



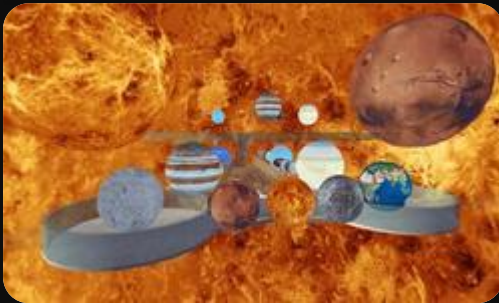
Am Portal von Learning with **Atlas@Cern** stehen **43 Lernszenarien (Learning Missions)**, zahlreiche Lernobjekte und -materialien und ca. **18 Mobile Anwendungen** zur Verfügung: <http://www.virtuelleschule.at/atlas>
Portal: <http://www.learningwithatlas-portal.eu>

Virtual Worlds - Second Life



Curiosity AI

Humankind has often wondered, "Is there intelligent life beyond Earth?" Curiosity AI, by Shannon Bohle, is an award-winning project that explores how artificial intelligence can communicate R&D concepts to be used in our future exploration of Mars.



Euclidia Space Planetarium

The Euclidia Space Planetarium is designed to educate and entertain Residents about astronomy, the night sky, and celestial navigation. Follow the footsteps through the multiple levels to explore our vast galaxy.



MICA

The Meta Institute for Computational Astrophysics (MICA) is exploring the development and promotion of virtual worlds and virtual reality technologies for professional research in astronomy and its related fields.

Virtual Worlds - Second Life



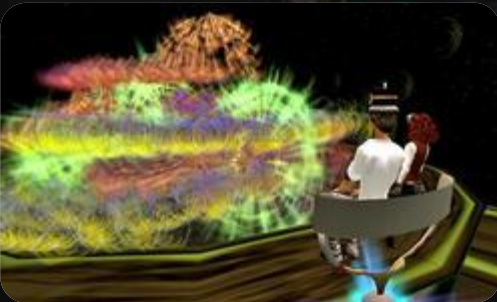
Jet Propulsion Laboratory

From NASA's California Institute of Technology, this exhibit showcases and explores the history of space travel and its related technologies.



The Bell of Firmament

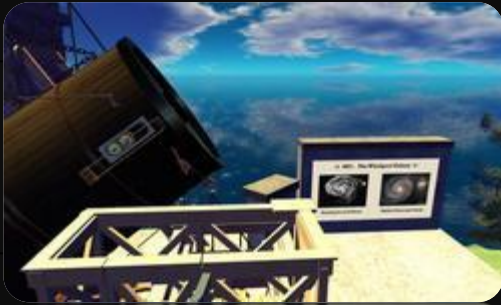
This interactive exhibit visualizes star constellations in 3D by displaying their position, size, and color as seen from Earth.



Cloud Chateau

Turn your environment settings to midnight, crank up your graphics sliders, take a seat, and prepare for a colorful, hypnotic, ever-changing light show courtesy of The Particle Laboratory Learning Center.

Virtual Worlds - Second Life



Astronomy Island

Take a tour of a digital planetarium, listen to podcasts, and learn all about astronomy at this expansive build, which is sponsored by the American Astronomical Society.



Apollo Moon Landing

Revisit the Apollo 11 moon landing with a trip to a virtual replica of Tranquility Base from Daden Limited.



Neil A. Armstrong Library & Archives

Located in NASA's CoLab region in Second Life, this area exhibits records and other documentation pertaining to astronauts and space exploration throughout history.

Connex to curriculum

Strategy: Cooperations & Networks

The Idea ?

- 1) To **support communication** between the **international teams of teachers**
- 2) To bring together and use **existing similar topics and resources**
- 3) To **exchange experiences**
- 4) To organise **international „Online Lessons“ / „Community of good practices“ / ...**, with international teams using scenarios from different projects
- 5) ...

Which tools will we try out and use ?

Virtual Meetings (Lessons):

- 1) Skype, ICQ , Wimba, ...
- 2) Facebook, LinkedIn, Twitter, ...
- 3) Second Life (OSR Second Life Camp), ...
- 4) ...

Face to Face meetings:

- 1) Workshops in countries, ...
- 2) Real meetings during summerschools, other events, ...
- 3) ...

Which clusters have been set up and mindmapped ?

TOPICS	PROJECTS related
Astronomy, Astrophysics	Cosmos, Atlas@Cern
Physics	Cosmos, Atlas@Cern, KLiC
Technics	pSkills (Scratch)

Draft document available

networking_clustering_GESAMT.docx

Actual Projects with BMUKK as partner

OSR – OpenScienceResources

Educational Pathways and LOs from Science Centers and Schools for IBSE

pSkills

Courses for teaching programming skills with Educational Programming Languages

Pathway

Teacher Trainings and educational materials for IBSE

RUeNTER

Training portal for adult education in rural areas

CerOrganic

Certified training in organic agriculture for farmers and OA-advisers

PRI-SCI-NET

Establishment of a teacher community and training with educational material for IBSE in primary education

KLiC

Educational scenarios for the use of wearable sensors

SEE Science

Networking of science centers for boosting innovation in SEE region



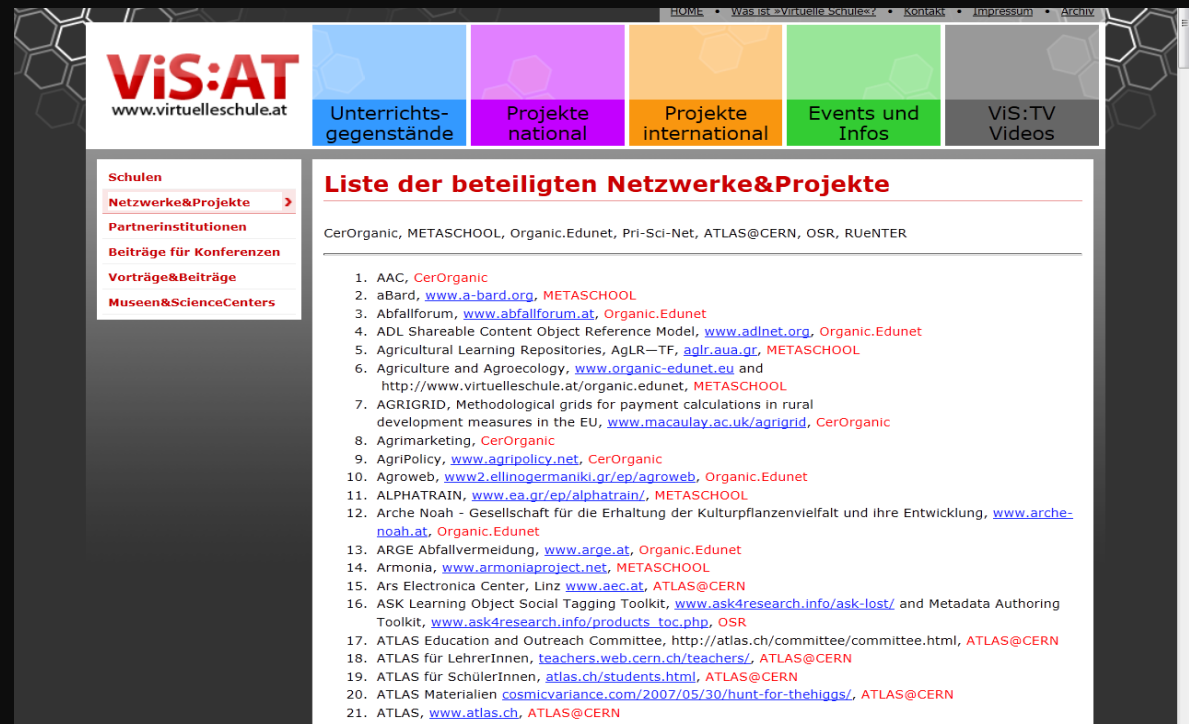
Short Overview of BMUKK Network

- Astronomical Observatories, Universities (36 in Austria)
- Museums, Science Centers
 - *Ars Electronica Center Linz*
 - *Universität Wien, Institut für Astronomie*
 - *Technisches Museum Wien*
 - *Welios, Wels*
- Schools
 - *BG Schwechat*
 - *BG Rohrbach mit Wahlpflichtfach Astronomie*
- Scientists
 - *Dietmar Hager, Fachvorträge im Ars Electronica Center Linz*
 - *Franz Viehböck, Interview für Cosmos*
- Networks
 - *Science Center Netzwerk*

Websites for online studies

About **70 Websites** concerning the topics Astronomy, Astrophysics, collected on Virtual School Austria

<http://www.virtuelleschule.at/netzwerk>



The screenshot shows the website **ViS:AT** (www.virtuelleschule.at) with a navigation menu and a list of participating networks and projects. The navigation menu includes: Unterrichtsgegenstände, Projekte national, Projekte international, Events und Infos, and ViS:TV Videos. The left sidebar contains links for Schulen, Netzwerke&Projekte, Partnerinstitutionen, Beiträge für Konferenzen, Vorträge&Beiträge, and Museen&ScienceCenters. The main content area is titled "Liste der beteiligten Netzwerke&Projekte" and lists 21 items, including AAC, CerOrganic, aBard, METASCHOOL, Abfallforum, Organic.Edunet, ADL Shareable Content Object Reference Model, AgLR-TF, AgLR, METASCHOOL, Agriculture and Agroecology, AGRIGRID, ARGE Abfallvermeidung, Armonia, Armonia Project, ATLAS@CERN, Ask Learning Object Social Tagging Toolkit, ATLAS Education and Outreach Committee, ATLAS für LehrerInnen, ATLAS für SchülerInnen, and ATLAS Materialien.

ViS:AT
www.virtuelleschule.at

HOME • Was ist «Virtuelle Schule»? • Kontakt • Impressum • Archiv

Unterrichtsgegenstände | Projekte national | Projekte international | Events und Infos | ViS:TV Videos

Schulen
Netzwerke&Projekte >
Partnerinstitutionen
Beiträge für Konferenzen
Vorträge&Beiträge
Museen&ScienceCenters

Liste der beteiligten Netzwerke&Projekte

CerOrganic, METASCHOOL, Organic.Edunet, Pri-Sci-Net, ATLAS@CERN, OSR, RUENTER

1. AAC, CerOrganic
2. aBard, www.a-bard.org, METASCHOOL
3. Abfallforum, www.abfallforum.at, Organic.Edunet
4. ADL Shareable Content Object Reference Model, www.adlnet.org, Organic.Edunet
5. Agricultural Learning Repositories, AgLR—TF, aglr.aau.gr, METASCHOOL
6. Agriculture and Agroecology, www.organic-edunet.eu and <http://www.virtuelleschule.at/organic-edunet>, METASCHOOL
7. AGRIGRID, Methodological grids for payment calculations in rural development measures in the EU, www.macaulay.ac.uk/agrigrid, CerOrganic
8. Agrimarketing, CerOrganic
9. AgriPolicy, www.agripolicy.net, CerOrganic
10. Agroweb, www2.ellinogermaniki.gr/ep/agroweb, Organic.Edunet
11. ALPHATRATIN, www.ca.gr/ep/alphatrain/, METASCHOOL
12. Arche Noah - Gesellschaft für die Erhaltung der Kulturpflanzenvielfalt und ihre Entwicklung, www.arche-noah.at, Organic.Edunet
13. ARGE Abfallvermeidung, www.arge.at, Organic.Edunet
14. Armonia, www.armoniaproject.net, METASCHOOL
15. Ars Electronica Center, Linz www.aec.at, ATLAS@CERN
16. ASK Learning Object Social Tagging Toolkit, www.ask4research.info/ask-lost/ and Metadata Authoring Toolkit, www.ask4research.info/products_toc.php, OSR
17. ATLAS Education and Outreach Committee, <http://atlas.ch/committee/committee.html>, ATLAS@CERN
18. ATLAS für LehrerInnen, teachers.web.cern.ch/teachers/, ATLAS@CERN
19. ATLAS für SchülerInnen, atlas.ch/students.html, ATLAS@CERN
20. ATLAS Materialien cosmicvariance.com/2007/05/30/hunt-for-thehiggs/, ATLAS@CERN
21. ATLAS, www.atlas.ch, ATLAS@CERN



vCard



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Virtuelle Schule Website



<http://www.virtuelleschule.at>

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Videos

Cosmos: <http://www.vimeo.com/user996246/videos>

Atlas@Cern: <http://www.vimeo.com/user996246/videos>

Second Life: <http://www.vimeo.com/28306249>