Innovate with us - App Camp Barcelona 2015

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Internal

Concept

- ✓ European Space Agency (ESA) provides satellite data
- ✓ SAP HANA Cloud Platform
- ✓ Solving humanities big problems
- ✓ SAP challenges
- ✓ 6 Pre-selection events across Europe with 300 participants (6x50)
- ✓ Mixed teams of professors, students and professional developers
- ✓ Best 6 teams will go to Mobile World Congress Barcelona (MWC)
- ✓ 3 days intensive HANA Cloud Platform programming in Barcelona

Copernicus Programme

Copernicus Programme

- Sentinel satellite fleet
  - Sentinel 1 (2 radar satellites - all-weather, day and night radar imaging for land and ocean services)
  - Sentinel 2 (2 optical satellites - high-resolution optical imaging for land services)
  - Sentinel 3 (ocean and global land monitoring services)
  - Sentinel 4 (atmospheric composition monitoring)
  - Sentinel 5 (atmospheric composition monitoring)
  - Sentinel 6 (high precision altimetry)
- GMES Contributing Missions (30 other satellite missions)
- In-situ data (ground-based, air-borne, and ship/buoy-based observations and measurements)

These services fall into six main categories: land management, the marine environment, atmosphere, emergency response, security and climate change.

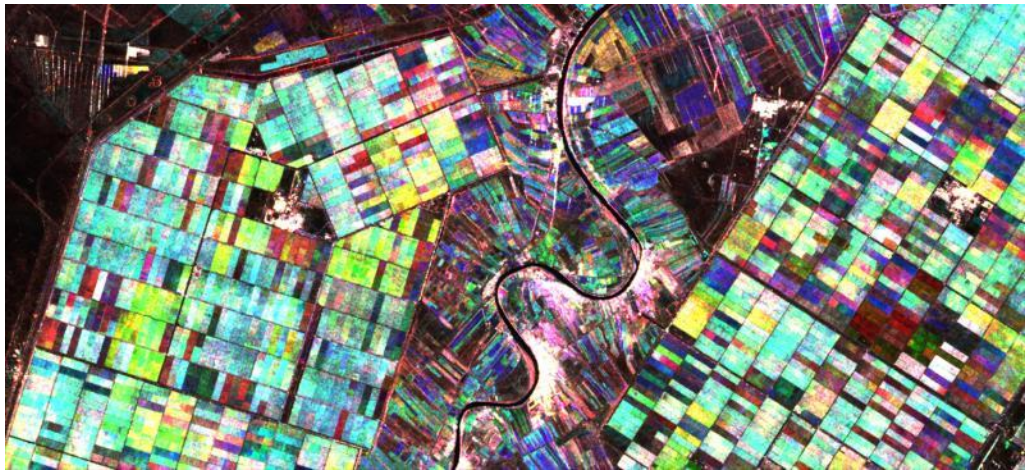
© RapidEye. Lake Zurich, with the city of Zurich at its northern tip. At a resolution of 10 m per pixel, it is possible to zoom in to see details such as buildings and roads.

Data Examples

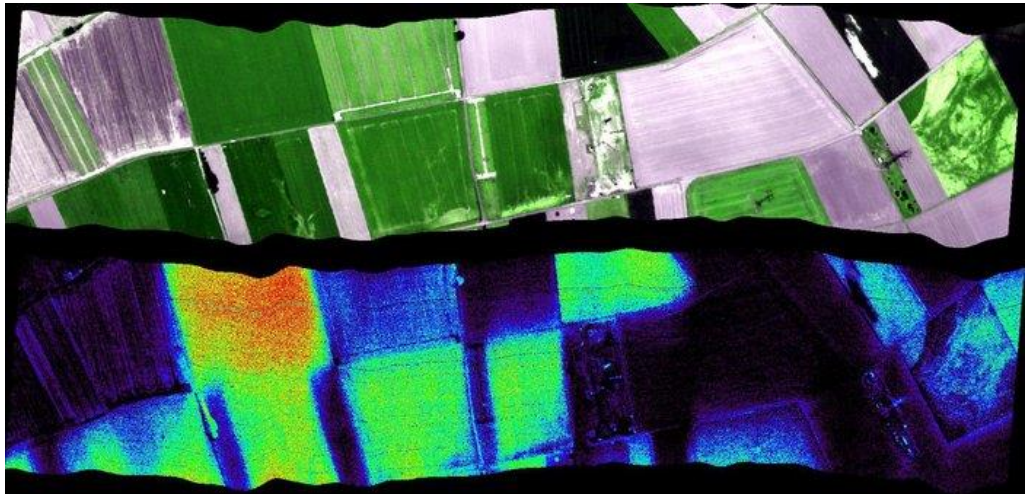
Examples for information provided by Copernicus services are

- Soil moisture
- Land displacement (can be caused by mining)
- Sea-ice thickness
- Wind direction and speed
- Reflectance (red, green, blue, near infrared)
- Vegetation Index
- Land-surface and sea-surface temperatures
- Inorganic suspend matter
- Sea salinity
- Chemical substance, such as ozone or nitrogen oxide levels

Lot of other information may be extracted from the raw data.



© JAXA/ESA. This radar composite image shows changes in large-scale agricultural plots in southwest Iran.



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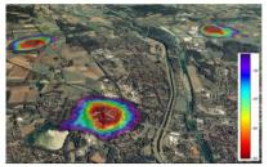
ESA App Camp - Challenges

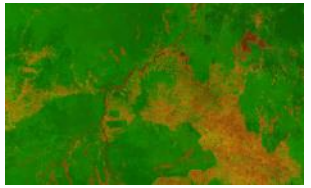
- Distribution and condition of crops
- Planting/harvesting dates
- Early warning
- Water management

Big Geo Data to maximize asset utilization while reducing envir., health, and safety risks*



- Environmental effects of mining
- Safety of workers and residents
- Forestry: What should be planted and when harvested
- Storm, fungus & parasite impacts
- Illegal activity

Observe and learn – Support Environmental Protection



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- Forestry: What should be planted and when harvested
- Storm, fungus & parasite impacts
- Illegal activity
- Gaming approach

Adopt a pixel

- Crowdsource validation and enrichment of EO data
- Distribute monitoring to mobile devices
- How to reward users and benefit economies
- Water, trees, cities, environmental protection

The Internet of Things – Smart solutions for an interconnected world*

- Monitor infrastructure
- Internet of things
- Predicitve maintenance
- Traffic flows
- Reduce transportation related pollution
- Wind, rain, radiation, lightning, storms

*SAP Challenges

The Geographic Information Challenge

Silos of Information Create an Incomplete Picture …

Business Applications

- Transactional data
- Master data
- Analytical data

Geographic Information Systems (GIS)

- Geographical data
- Location-based data
- Maps and topologies

Engineering Systems

- Diagrams
- 2D/3D graphs
- Animations

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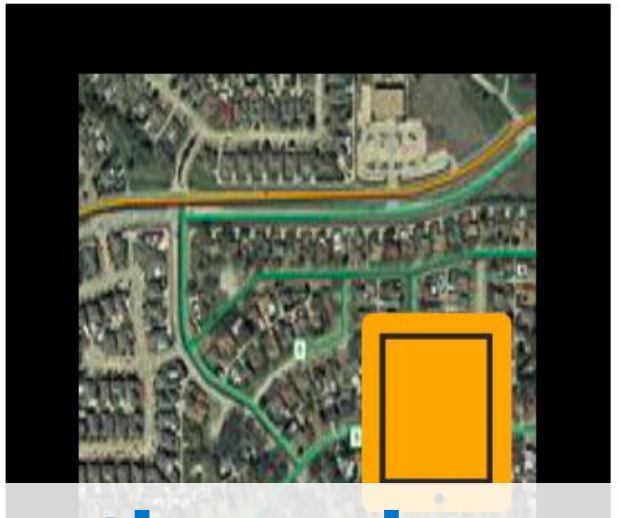

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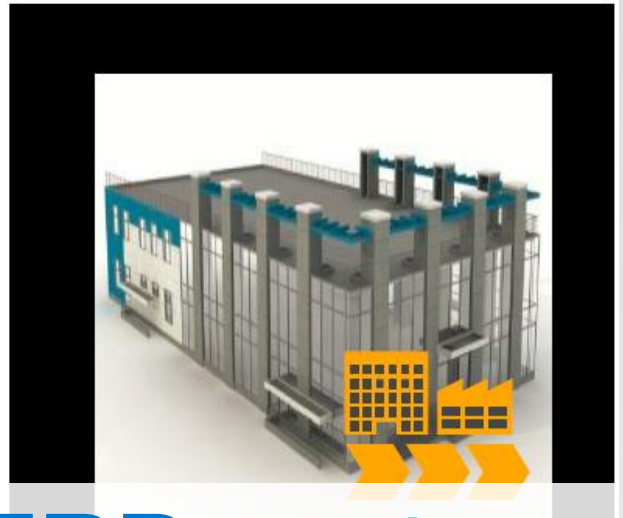


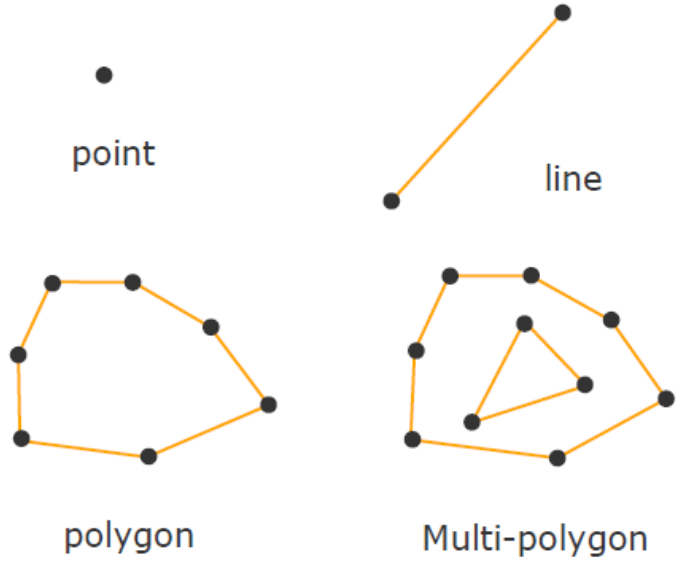
Engineering Systems

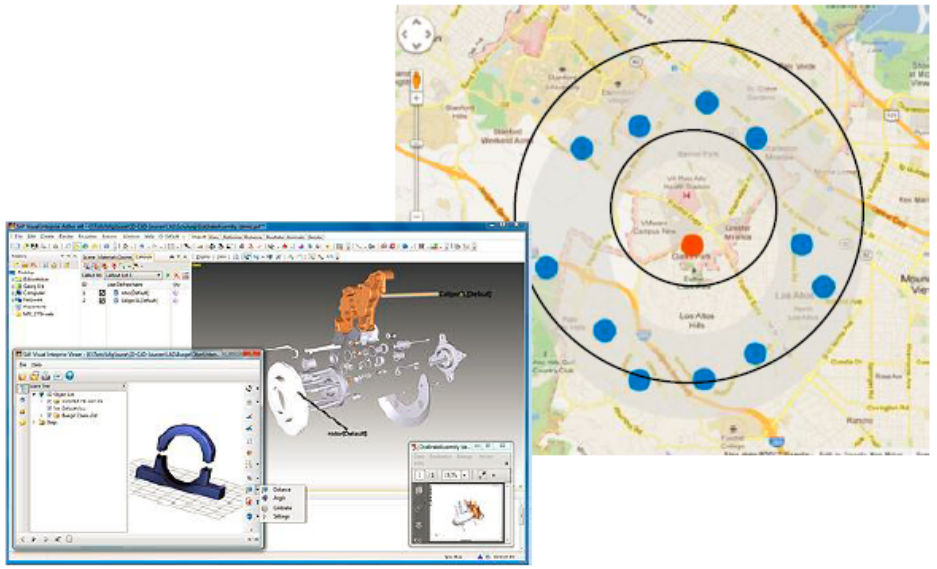
- Diagrams
- 2D/3D graphs
- Animations

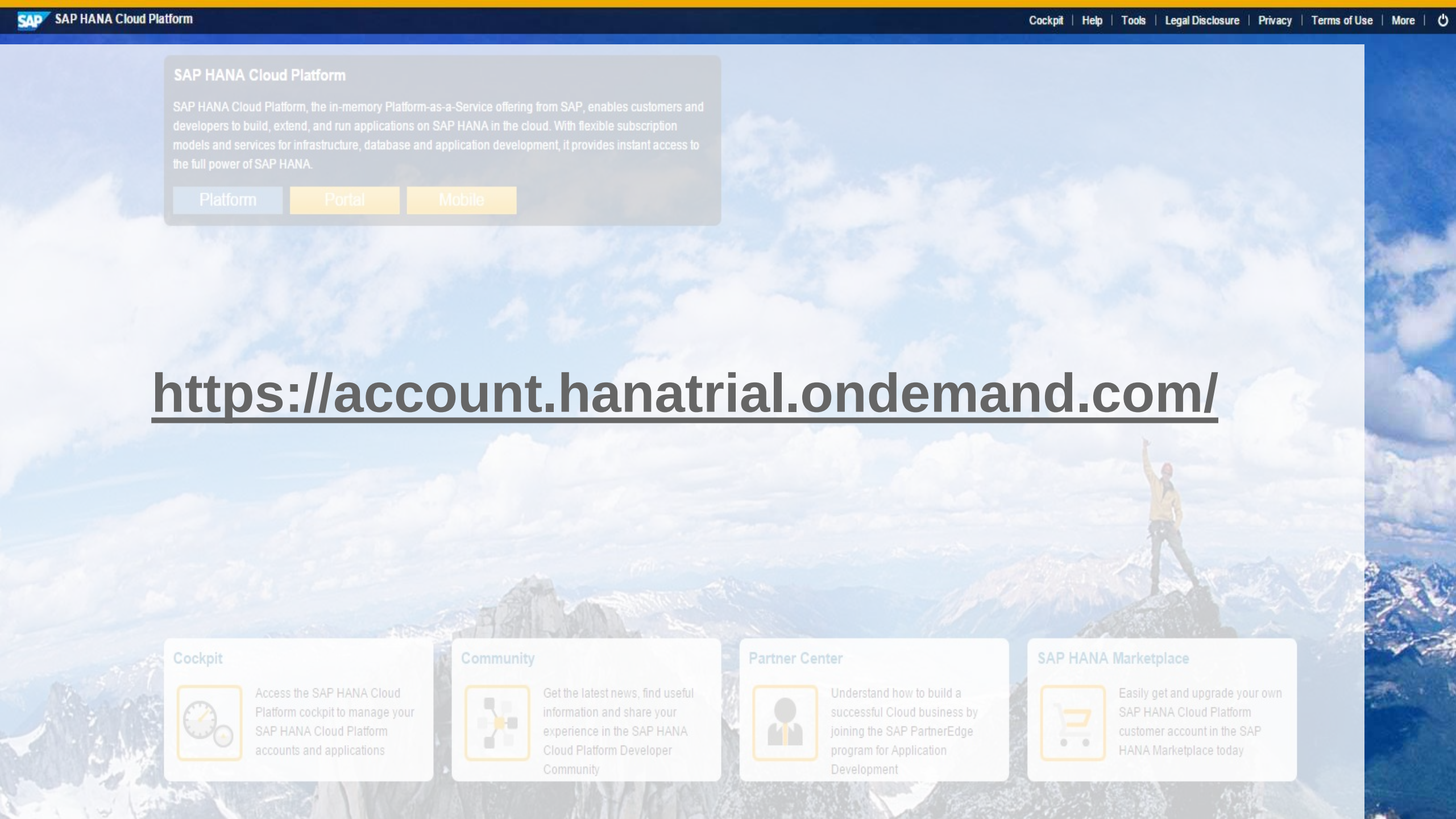
80% of transactions in an ERP system are related to a geographic location

Geospatial Processing in SAP HANA

- **Store, process, manipulate, share, and retrieve spatial data directly in the database**
- **Process spatial vector data with spatial analytic functions:**
  - **Measurements –** distance, surface, area, perimeter, volume
  - **Relationships –** intersects, contains, within, adjacent, touches
  - **Operators –** buffer, transform
  - **Attributes –** types, number of points
- **Store and transform various 2D coordinate systems**
- **Process vector data**
- **Implements the ISO/IEC 13249-3 standard and Open Geospatial Consortium (1999 SQL/MM standard)**






SAP HANA Cloud Platform
Cockpit | Help | Tools | Legal Disclosure | Privacy | Terms of Use | More |
SAP HANA Cloud Platform
SAP HANA Cloud Platform, the in-memory Platform-as-a-Service offering from SAP, enables customers and developers to build, extend, and run applications on SAP HANA in the cloud. With flexible subscription models and services for infrastructure, database and application development, it provides instant access to the full power of SAP HANA.
Platform
Portal
Mobile
https://account.hanatrial.ondemand.com/
Cockpit
Access the SAP HANA Cloud Platform cockpit to manage your SAP HANA Cloud Platform accounts and applications
Community
Get the latest news, find useful information and share your experience in the SAP HANA Cloud Platform Developer Community
Partner Center
Understand how to build a successful Cloud business by joining the SAP PartnerEdge program for Application Development
SAP HANA Marketplace
Easily get and upgrade your own SAP HANA Cloud Platform customer account in the SAP HANA Marketplace today

SAP Student Entrepreneurship Program

Implement Your Ideas Using HANA Cloud Platform

Students Learning with SAP

openSAP

SAP University Alliances

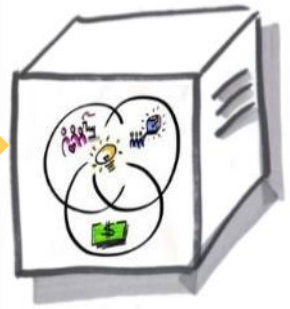
SAP Learning Hub

Business Model Development with Design Thinking

Desirable

Feasible

Viable



Students implement promising ideas using HANA Cloud Platform

Student can apply to the SAP Startup Focus Program and other startup incubators

About HANA | Cloud | Learn | Try | Implement | Marketplace | Blog | HANA Academy

Home > Learn > Startups

startup.focus.

Overview | Events | Go to Market | News & Views | Alliances | Startup Success

hi.

If you're a startup with a Big Data, predictive or real-time analytics solution - you're just what we're looking for. Learn More

http://www.saphana.com/community/learn/startups

SAP Student Entrepreneurship Program

Further Information

http://hcp.sap.com/students.html

http://www.saphana.com/community/learn/startups

https://training.sap.com/shop/content/SAP-Learning-Hub-Student-Edition

https://open.sap.com/

https://open.hpi.de/

http://www.app-camp.eu/

http://marketplace.saphana.com/

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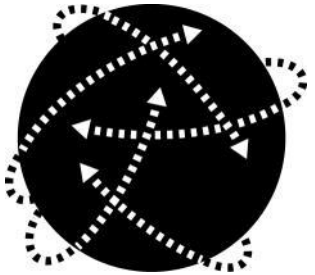
Appendix



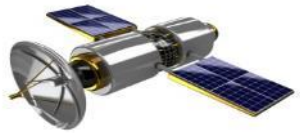
Participants and ESA Member Countries

Participation in the App Camp is open to any app developer of adult age from anywhere in the world.

ESA member-states, states involved in the Copernicus Space Component (CSC), and countries participating in the Horizon 2020 Programme of the European Community, are all listed hereafter for information only:

Albania, Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, the Faroe Islands, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, the Former Yugoslav Republic of Macedonia, Malta, Montenegro, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and Canada.

Huge Opportunity for Industries
Benefit from Earth Observation Data and Promote HANA



Make HANA the Standard for Processing Earth Observation Data

- Native HANA Geospatial API
- Benefit from High Performance Mass Data Processing Capability

European Space Agency

- Provide terabytes of earth observation raw data
- Make the data available for earth observation service providers

...

Earth Observation Service Providers

- Use the power of HANA in order to calculate semantic earth observation data that benefit target industries

...

SAP Industry Customers

- Use the power of HANA to combine semantic earth observation data with other business data
- Get a competitive advantage