



Class@cross

Demonstration project in response to COVID 19 emergency - STATUS: concluded

<https://business.esa.int/projects/classcross>



The project

Class@cross has developed a **SATCOM solution** aiming at offering an **Education Outreach** platform accessible from any ICT device to enrich the educational opportunities with special regard to the social factors and cultural and scientific contents. The service has been conceived to improve social aggregation during the emergency periods such as the lockdown imposed by the COVID-19 pandemic. However, the pilot stage has highlighted how the solution is also suitable in “non-emergency periods” because it contributes to enrich the didactic and cultural path. Research and scientific centres as well as cultural and tourism institutions had the opportunity to re-open the doors to the public, acting as the content providers and valorizing the rich heritage of scientific and cultural contents largely available.

The Class@cross solution offers to students, teachers and families the opportunity to enjoy cultural and scientific contents thanks to “**LIVE and INTERACTIVE**” tours. The Class@cross project has been proposed by Openet in partnership with the Italian Space Agency (ASI) and the European Space Agency (ESA) and has been realized in collaboration with:

- **The Astronomical Observatory of Capodimonte (Naples – IT)**
- **The Parco della Murgia Materana (Matera – IT)**
- **The Comprehensive Institute Enrico Fermi (Matera – IT)**

Eventually, the project has realized n. 16 live sessions with the involvement of n. 337 public users, n. 258 students and n. 18 teachers belonging to n. 15 classes. From the content providers side, n. 5 researchers and 3 moderators have been involved in the operational activities.

<https://youtu.be/cThntprEoZM>

The solution

The solution is based on:

- the existing ONE CLASS! Open Network for Education platform <https://business.esa.int/projects/one-class-open-network-for-education>
- the following new elements:

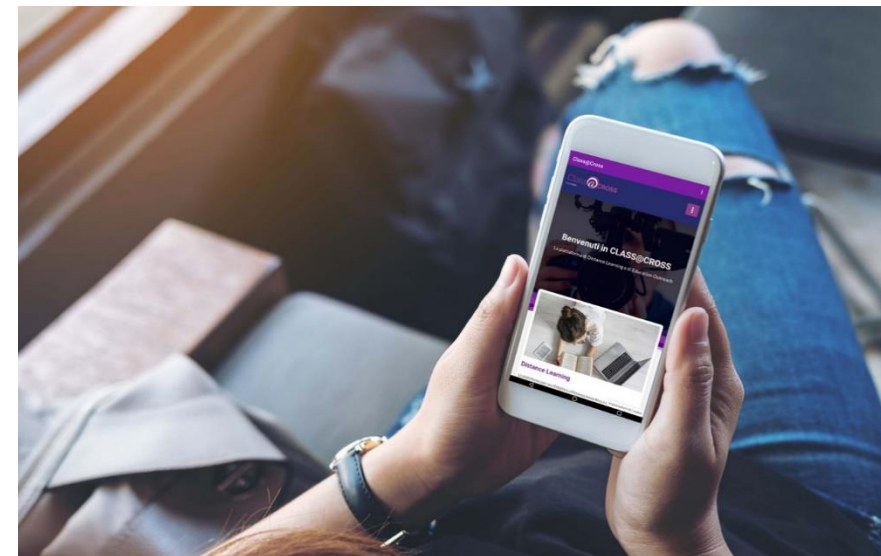
A) **Mobile Application** to support the portability of the service and opens the participation and accessibility. User can book the “live” participation to the Education Outreach activities.

B) **Education Outreach** through live tours/visits within museums, science centres, cultural centres/institutions aiming at bringing culture and science at students'/teachers' homes, overcoming distances and physical barriers.

The components are independent systems that provide different and fully integrated educational services to the end-user.

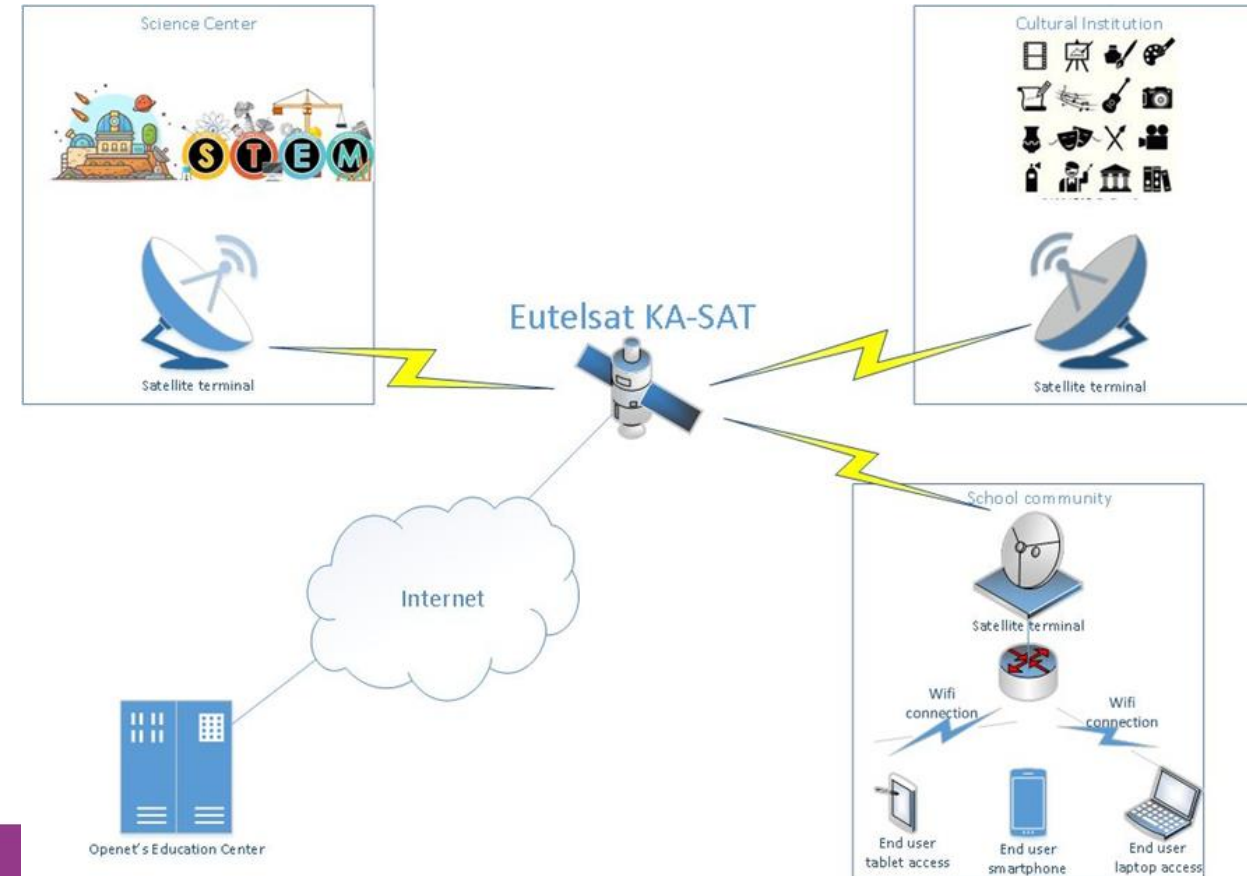
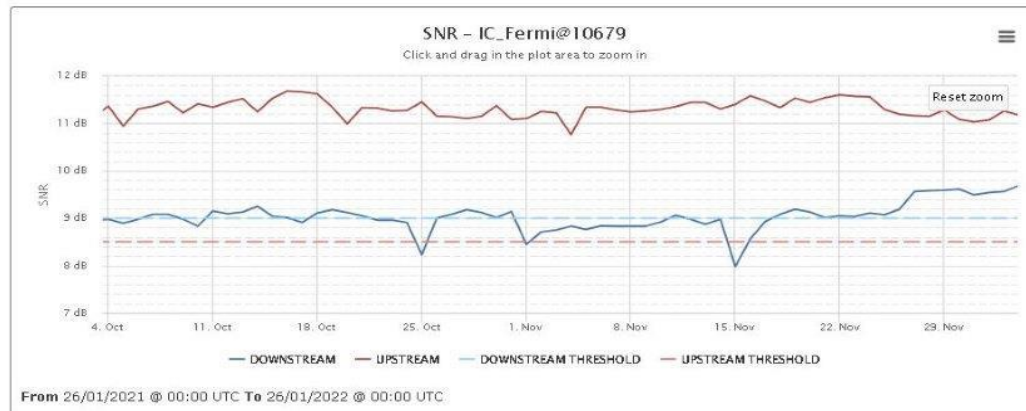
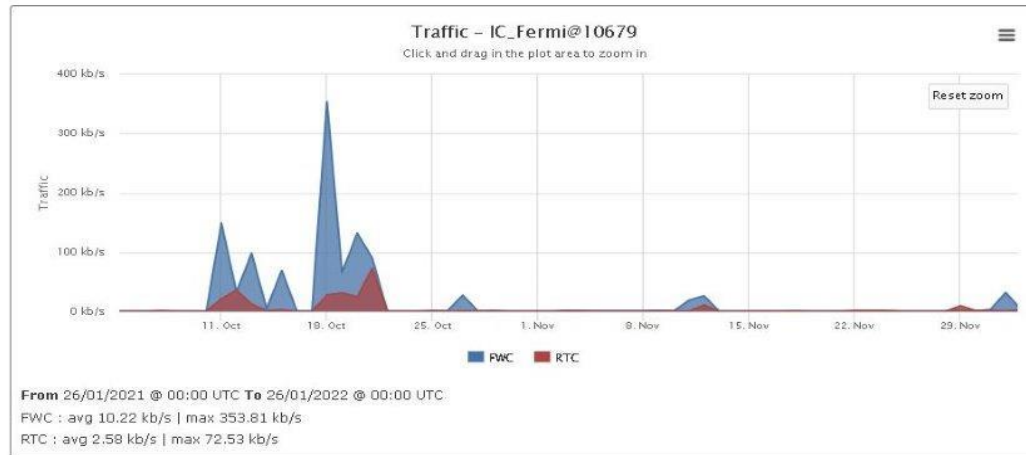
The platform is reachable at <https://www.classacross.education/>

The APP has been developed using the java language and bootstrap using Android Studio. The APP can be downloaded accessing to <https://www.classacross.education/index.php/downloads/classcross-app-per-android/> and introducing credentials created by Openet.



The network scheme

The satellite terminals have been provisioned with the satellite connectivity with “ad-hoc” service profiles. The satellite technology is used to guarantee high quality content production and distribution. Thanks to the high uplink capacity the audio video educational/cultural/scientific contents are broadcasted in real time through the Class@cross platform to the user community. The uplink satellite terminal operated on KA-SAT 9° East is a full IP-based transport service utilised for multiple purposes: contribution of live video and audio, file transfer, monitoring and surveillance. The transfer of content between the uplink units installed on the stakeholder (one of the content provider location) premises and Openet’s data center premises (where Class@cross platform is hosted) operates in IP using either UDP or TCP/IP Protocols. Typically, the video is encoded in real time by an MPEG encoder at the remote location capable to stream the encoded video content in a Transport Stream over IP. The encoder will stream in RTP/UDP the video content to the public IP address of the Class@cross hosting server.



CONCLUSIONS

The project has remarked how the Outreach Education tool is a business opportunity for scientific and cultural content providers that as a matter of fact, have represented, during the emergency the economic subjects mostly affected by economic restrictions due to the Government policy (people must remain in their own homes!). *At the end of this challenging but stimulating project, it can be highlighted that the initial objectives have been met. The project has demonstrated how the satellite technology can contribute to improving the didactic path through the valorization of the existing scientific and cultural heritage as well as to enriching the didactic visits school programme beyond periods of emergency.*

- From the technical point of view, the proposed solution has demonstrated to be very reliable, affordable, and suitable to overcome isolation and facilitate the access to advanced telecommunication system open training resources mainly based on high quality audio-video contents.
- About the school community, the activities have benefited from the fruitful environment found inside the school, where teachers and students were now more than accustomed to the use of technology following the long periods of use of distance learning due to the COVID 19 pandemic. This collaborative aspect, in addition to facilitating operations, has strengthened the concept of the usefulness of using technology for educational purposes contributing helping to consolidate the perception of the value of the Class@cross service as an opportunity for the Education Outreach.
- About the content providers, Class@cross has demonstrated to be a suitable and affordable solution to enrich the didactic offer for schools both during the pandemic lockdown and in normal conditions. The number of potential end- users associated to the “niche markets” – probably unreachable without the use of distance TLC solutions – can be increased and, therefore, improve the business opportunities. The commercial agreements with potential content providers will be based on a win-win model to create “multiplier and amplifying” effects on market opportunities for all, with positive impact on the tourism and cultural offer too.