SEVENTH FRAMEWORK PROGRAMME

THEME [ICT-2011.3.5]
[Core and disruptive photonic technologies]

MIRAGE

Multi-coRe, multi-level, WDM-enAbled embedded optical enGine for Terabit board-to-board and rack-to-rack parallel optics

Grant Agreement no. 318228

D7.4
Short Video

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Abstract:

This deliverable report describes the preparation of a short promotional video for MIRAGE, which will be used for dissemination purposes. The video file is publicly available on the MIRAGE project website.

Keyword list:

Short video, website, YouTube, dissemination.

Executive Summary

This deliverable reports on the preparation of the MIRAGE short video. This promotional video is a useful instrument for the dissemination of the project to a broad audience including technology enthusiasts, policy makers, politicians and the general public.

The short video is publicly available on the MIRAGE website www.ict-mirage.eu as well as on YouTube http://www.youtube.com/watch?v=9t0HA25FTUk.

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1. Introduction

The MIRAGE short video aims to provide a concise project overview in a way that is comprehensible to a broad audience. The video was coordinated by ICCS/NTUA and was assigned to a specialized graphic and video design company (Steficon, Greece) to ensure a professional, high-quality result.

The project presentation concept follows a stepwise approach: starting from the definition of the challenge that MIRAGE aims to tackle (putting the project into concept), the video continues with the approach followed by MIRAGE. This is the most extensive section that explains the innovations brought by the project both at the system and at the photonic integration level. Finally, the video concludes with a description of the expected results from the project.

The MIRAGE video clip was finalized in late July 2013, whereas a pre-final version was presented and approved at the 1st project review meeting. In view of the amendment that was under preparation at the time regarding the addition of Mellanox in the MIRAGE consortium, the list of participants shown in the video already included Mellanox. As a result, the video was only published after the signature and accession to the contract by Mellanox.

As a next step, the MIRAGE video will be distributed through the dissemination channels of all partners within MIRAGE. Furthermore, it has been proposed by the project coordinator that a follow-up video clip will be generated at later stages of the project, reporting on the project achievements.

2. Preparation of MIRAGE short video

ICCS/NTUA coordinated the preparation of the MIRAGE short video, working in close collaboration with the experts of the graphic design company to ensure a professional and broadly comprehensible result. Both the voice-over text and the animations were carefully consolidated and in some cases different versions were considered and reviewed. Where possible, simple metaphors were used in the presentation scenario to enhance comprehension and make the MIRAGE concepts accessible by a broad audience.

The final voice-over text of the MIRAGE short video is presented below:

The internet is a digital cloud containing massive amounts of online information, available for instant delivery to billions of ***connected users****. The entire internet content is stored in* ***datacenters****, huge warehouse-size constructions hosting hundreds or even thousands of data servers where information is stored, all interconnected with each other. As datacenters form the heart of the internet, the speed of these intra-datacenter* ***interconnections*** *is crucial in order to deliver the online content to the end-user at high speed. As a result, copper interconnects are being rapidly replaced by "****active optical cables****" which essentially consist of an electro-optic transmitter, an optical fibre and an opto-electronic receiver. However, active optical cable technologies used today are already reaching their physical* ***speed limits****. Packing multiple parallel lanes of optical interconnects in the same system can solve the problem in the short term, but* ***can't scale infinitely****: there is simply not enough space, whereas the large fibre bundle severely blocks system ventilation.*

MIRAGE *is a European project that aims to tackle this challenge and develop the technology for the next generation of active optical cables, capable of carrying over* ***six hundred*** *percent more information than current solutions. To do so, MIRAGE attacks the interconnection problem from multiple sides: First, it upgrades the operating speed of the* ***transmitters*** *and* ***receivers*** *by over fifty percent, so that data is transmitted faster through each optical lane. A further increase in the operating speed would require very expensive electronics and to avoid this, MIRAGE brings in new, smarter ways of squeezing more information into the optical cable: Advanced* ***coding schemes*** *are used, doubling the amount of data transferred at the same speed.* ***Different wavelengths*** *are simultaneously fed into the optical fibre, so that multiple data lanes are transmitted within a single fibre. To further increase the density of information transmitted through the active optical cable, new,* ***multi-core fibres*** *are employed; these fibres can carry up to 7 times the amount of data carried by conventional optical fibres. All these innovations are enabled by cutting-edge photonic and electronic integration technology, put together in a* ***3D optoelectronic chip*** *that is easy to assemble and suitable for mass production. Vertically-emitting lasers, called VCSELs are placed on top of silicon-photonic boards that handle signals of different wavelengths or coming from different fibre cores. A silicon-electronic layer provides all necessary electronics for generating and detecting*

the high-speed signals, whereas a 3D-glass-waveguide interface connects efficiently the optoelectronic chip with the multicore fibres.

The result is stunning: MIRAGE aims to build the first active optical cable carrying one terabit of information per second. This speed is so fast that it would be enough to transfer all data from a full one-terabyte hard-disk-drive within just eight seconds. Using innovative technologies, the MIRAGE active optical cable will consume up to seventy percent lower power; it will also use ninety percent less fibres compared to the current state-of-the art ones, meeting the challenges for cooling and ventilation in the data centre. Data centers are the hot spots of our internet and the MIRAGE consortium is developing the enabling technology to make them faster, greener and cheaper.

For more information, please visit our website at www.ict-mirage.eu.

It should be noted that the copyright of all the material featured in the video (e.g. images, soundtrack) has been acquired in agreement with relevant EU legislation.

(a) ***(b)***

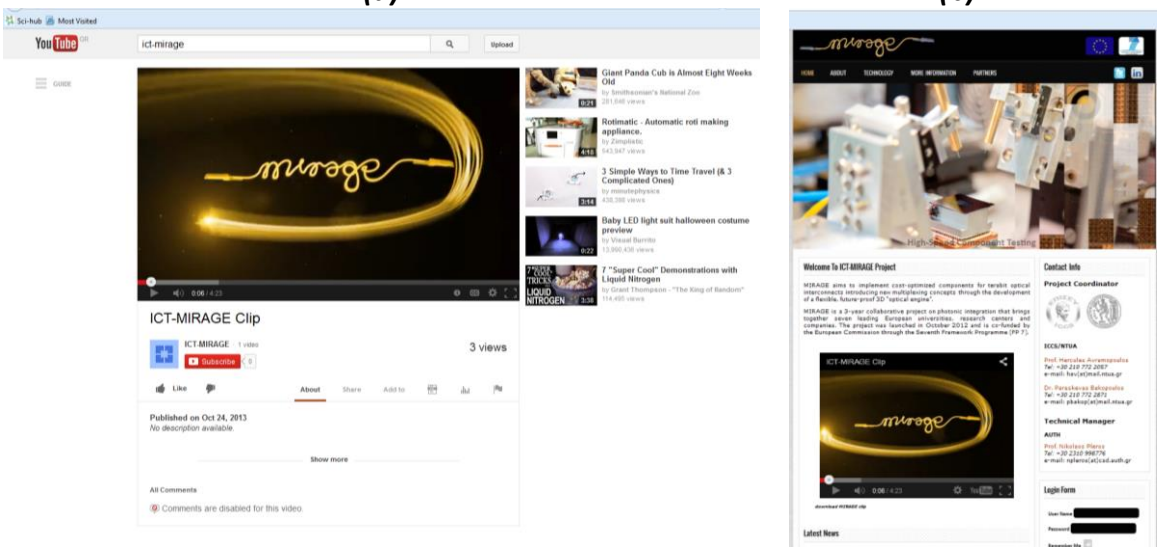

Figure 1: *Screenshots of MIRAGE video, uploaded on (a) You Tube, (b) MIRAGE website.*

Distribution of the MIRAGE clip is carried out through popular video-sharing pages and the official project website. A dedicated YouTube account has been generated for ICT-MIRAGE and the clip has been uploaded at: www.youtube.com/watch?v=9t0HA25FTUk. The video can be viewed online at different resolutions ranging from 144p for very slow connections up to High Definition (1080p) for high-quality viewing on large screens or projectors.

The video has been also uploaded on the first page of the MIRAGE official website to maximize accessibility, at: www.ict-mirage.eu.

3. List of Figures