



## Nano Scale Disruptive Silicon-Plasmonic Platform for Chip-to-Chip Interconnection

### Investigation of the cost and power consumption efficiency of the developed plasmonic devices

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#### List of Partners concerned

Partner number	Partner name	Partner short name	Country	Date enter project	Date exit project
1	Karlsruher Institut für Technologie	KIT	Germany	M1	M36
2	INTERUNIVERSITAIR MICRO-ELECTRONICA CENTRUM VZW	IMCV	Belgium	M1	M36
3	TECHNISCHE UNIVERSITEIT EINDHOVEN	TU/e	Netherlands	M1	M36
4	RESEARCH AND EDUCATION LABORATORY IN INFORMATION TECHNOLOGIES/ ATHENS INFORMATION TECHNOLOGY	AIT	Greece	M1	M36
5	UNIVERSITAT DE VALENCIA	UVEG	Spain	M1	M36
6	STMICROELECTRONICS SRL	ST	Italy	M1	M36
7	UNIVERSITEIT GENT	UGent	Belgium	M1	M36

### *Summary*

MS7 has been achieved by the completion of the study for the cost and the power consumption of the plasmonic modules. The implemented plasmonic-based architecture is evaluated and compared against alternative technologies like photonic and electronic interconnects. The comparison study is divided in two sections: In the first section, a comparison between conventional electronic CMOS, photonic and the Navolchi project interconnect approach is attempted, on the fields of energy efficiency and implementation details, at present and up to a long term time scale. In the second section, the comparison is specified at the device module level of an interconnect system, for both active (transmitters, receivers) and passive modules (waveguides, couplers), in terms of energy and cost efficiency. The comparison showed that, among conventional CMOS, photonic and plasmonic technologies, in terms of energy dissipation, and cost, plasmonic solution can implement energy- and cost-efficient chip module devices, and on/off chip interconnects that could meet future requirements. In terms of cost, the comparison shows that plasmonic interconnects would be much more cost efficient than photonic interconnects, as far as total interconnect cost is concerned. The results from this study have been reported in Deliverable D2.5 “Technoeconomical evaluation with respect to the cost efficiency and green aspects”.