Communication to the Governing Board of the ENIAC Joint Undertaking about the selection of project proposals and the allocation of public funding following negotiations for Call 2010

PART 1 : LIST OF SELECTED PROPOSALS FOR RECEIVING PUBLIC FUNDING

ARTEMOS	Accepted Eligible cost	Public funding allocated
ENIAC JU		**6.836.061,00 €**
AT	3.867.917,00 €	1.248.385,00 €
BE	2.999.257,00 €	625.253,00 €
CZ	548.850,00 €	354.492,00 €
DE	2.637.661,00 €	0,00 €
EL	883.000,00 €	369.039,00 €
ES	782.139,00 €	521.532,00 €
FI	3.043.505,00 €	1.013.889,00 €
FR	10.250.511,00 €	1.660.733,00 €
IE	0,00 €	0,00 €
IT	4.712.500,00 €	1.364.263,00 €
NL	10.875.753,00 €	1.189.839,00 €
PL	0,00 €	0,00 €
PT	235.932,00 €	196.531,00 €
RO	0,00 €	0,00 €
SE	97.470,00 €	0,00 €
SK	0,00 €	0,00 €
UK	0,00 €	0,00 €
Total	**40.934.495,00 €**	**15.380.017,00 €**

EPAMO	Accepted Eligible cost	Public funding allocated
ENIAC JU		**2.224.524,00 €**
AT	0,00 €	0,00 €
BE	0,00 €	0,00 €
CZ	0,00 €	0,00 €
DE	4.784.747,00 €	2.615.929,00 €
EL	0,00 €	0,00 €
ES	0,00 €	0,00 €
FI	2.450.600,00 €	979.160,00 €
FR	0,00 €	0,00 €
IE	0,00 €	0,00 €
IT	0,00 €	0,00 €
NL	5.235.156,00 €	1.391.470,00 €
PL	0,00 €	0,00 €
PT	0,00 €	0,00 €
RO	0,00 €	0,00 €
SE	850.000,00 €	283.050,00 €
SK	0,00 €	0,00 €
UK	0,00 €	0,00 €
Total	**13.320.503,00 €**	**7.494.133,00 €**

ENLIGHT	Accepted Eligible cost	Public funding allocated
ENIAC JU		**6.899.794,00 €**
AT	0,00 €	0,00 €
BE	0,00 €	0,00 €
CZ	0,00 €	0,00 €
DE	11.131.690,00 €	4.115.212,00 €
EL	0,00 €	0,00 €
ES	0,00 €	0,00 €
FI	2.362.547,00 €	987.835,00 €
FR	7.105.932,00 €	935.086,00 €
IE	0,00 €	0,00 €
IT	1.674.907,00 €	508.494,00 €
NL	18.943.585,00 €	4.286.811,00 €
PL	0,00 €	0,00 €
PT	0,00 €	0,00 €
RO	0,00 €	0,00 €
SE	97.470,00 €	0,00 €
SK	0,00 €	0,00 €
UK	0,00 €	0,00 €
Total	**41.316.131,00 €**	**17.733.232,00 €**

ERG	Accepted Eligible cost	Public funding allocated
ENIAC JU		**4.293.851,00 €**
AT	0,00 €	0,00 €
BE	2.000.701,00 €	866.304,00 €
CZ	0,00 €	0,00 €
DE	9.733.057,00 €	3.046.364,00 €
EL	0,00 €	0,00 €
ES	260.860,00 €	0,00 €
FI	0,00 €	0,00 €
FR	0,00 €	0,00 €
IE	911.369,00 €	604.625,00 €
IT	9.576.846,00 €	3.028.149,00 €
NL	1.988.351,00 €	0,00 €
PL	0,00 €	0,00 €
PT	0,00 €	0,00 €
RO	0,00 €	0,00 €
SE	0,00 €	0,00 €
SK	600.000,00 €	349.800,00 €
UK	640.500,00 €	243.286,00 €
Total	**25.711.684,00 €**	**12.432.379,00 €**

HEECS	Accepted Eligible cost	Public funding allocated
ENIAC JU		**833.894,00 €**
AT	0,00 €	0,00 €
BE	0,00 €	0,00 €
CZ	0,00 €	0,00 €
DE	0,00 €	0,00 €
EL	0,00 €	0,00 €
ES	0,00 €	0,00 €
FI	0,00 €	0,00 €
FR	0,00 €	0,00 €
IE	0,00 €	0,00 €
IT	1.247.192,00 €	292.751,00 €
NL	2.076.831,00 €	0,00 €
PL	241.400,00 €	144.840,00 €
PT	0,00 €	0,00 €
RO	0,00 €	0,00 €
SE	891.955,00 €	295.611,00 €
SK	0,00 €	0,00 €
UK	536.000,00 €	166.488,00 €
Total	**4.993.378,00 €**	**1.733.584,00 €**

MOTORBRAIN	Accepted Eligible cost	Public funding allocated
ENIAC JU		**6.112.613,00 €**
AT	4.737.198,00 €	1.534.159,00 €
BE	0,00 €	0,00 €
CZ	224.021,00 €	125.259,00 €
DE	11.938.930,00 €	3.843.706,00 €
EL	0,00 €	0,00 €
ES	469.930,00 €	214.870,00 €
FI	0,00 €	0,00 €
FR	0,00 €	0,00 €
IE	0,00 €	0,00 €
IT	8.921.725,00 €	2.724.398,00 €
NL	5.475.440,00 €	1.131.880,00 €
PL	0,00 €	0,00 €
PT	0,00 €	0,00 €
RO	801.190,00 €	450.000,00 €
SE	2.625.175,00 €	421.339,00 €
SK	0,00 €	0,00 €
UK	1.408.862,00 €	576.117,00 €
Total	**36.602.471,00 €**	**17.134.341,00 €**

NANOCOM	Accepted Eligible cost	Public funding allocated
ENIAC JU		**930.285,00 €**
AT	0,00 €	0,00 €
BE	0,00 €	0,00 €
CZ	0,00 €	0,00 €
DE	0,00 €	0,00 €
EL	917.440,00 €	595.512,00 €
ES	0,00 €	0,00 €
FI	0,00 €	0,00 €
FR	2.652.721,00 €	454.053,00 €
IE	0,00 €	0,00 €
IT	0,00 €	0,00 €
NL	0,00 €	0,00 €
PL	295.000,00 €	171.985,00 €
PT	0,00 €	0,00 €
RO	252.940,00 €	0,00 €
SE	1.452.470,00 €	0,00 €
SK	0,00 €	0,00 €
UK	0,00 €	0,00 €
Total	**5.570.571,00 €**	**2.151.835,00 €**

NANOTEG	Accepted Eligible cost	Public funding allocated
ENIAC JU		**1.016.910,00 €**
AT	0,00 €	0,00 €
BE	0,00 €	0,00 €
CZ	0,00 €	0,00 €
DE	329.637,00 €	0,00 €
EL	209.580,00 €	0,00 €
ES	728.695,00 €	0,00 €
FI	0,00 €	0,00 €
FR	2.418.843,00 €	501.951,00 €
IE	398.400,00 €	0,00 €
IT	932.280,00 €	256.659,00 €
NL	0,00 €	0,00 €
PL	0,00 €	0,00 €
PT	338.846,00 €	282.259,00 €
RO	0,00 €	0,00 €
SE	733.000,00 €	100.000,00 €
SK	0,00 €	0,00 €
UK	0,00 €	0,00 €
Total	**6.089.281,00 €**	**2.157.779,00 €**

PARSIMO	Accepted Eligible cost	Public funding allocated
ENIAC JU		**814.244,00 €**
AT	0,00 €	0,00 €
BE	0,00 €	0,00 €
CZ	0,00 €	0,00 €
DE	0,00 €	0,00 €
EL	0,00 €	0,00 €
ES	0,00 €	0,00 €
FI	0,00 €	0,00 €
FR	2.034.323,00 €	704.745,00 €
IE	0,00 €	0,00 €
IT	0,00 €	0,00 €
NL	0,00 €	0,00 €
PL	742.590,00 €	445.554,00 €
PT	0,00 €	0,00 €
RO	0,00 €	0,00 €
SE	0,00 €	0,00 €
SK	0,00 €	0,00 €
UK	2.098.800,00 €	696.876,00 €
Total	**4.875.713,00 €**	**2.661.419,00 €**

TOISE	Accepted Eligible cost	Public funding allocated
ENIAC JU		**3.617.522,00 €**
AT	0,00 €	0,00 €
BE	1.132.666,00 €	377.178,00 €
CZ	0,00 €	0,00 €
DE	0,00 €	0,00 €
EL	749.789,00 €	374.680,00 €
ES	1.161.029,00 €	743.439,00 €
FI	0,00 €	0,00 €
FR	12.512.872,00 €	1.803.412,00 €
IE	0,00 €	0,00 €
IT	6.105.450,00 €	1.749.741,00 €
NL	0,00 €	0,00 €
PL	0,00 €	0,00 €
PT	0,00 €	0,00 €
RO	0,00 €	0,00 €
SE	0,00 €	0,00 €
SK	0,00 €	0,00 €
UK	0,00 €	0,00 €
Total	**21.661.806,00 €**	**8.665.972,00 €**

The total funding allocation per ENIAC member State and the total JU allocation are as follows:

ALL	Accepted Eligible cost	Public funding allocated	Committed budget
ENIAC JU		33.579.698,00 €	30.140.000,00 €
AT	8.605.115,00 €	2.782.543,00 €	3.000.000,00 €
BE	6.132.624,00 €	1.868.735,00 €	2.000.000,00 €
CZ	772.871,00 €	479.751,00 €	479.751,00 €
DE	40.555.722,00 €	13.621.212,00 €	13.621.212,00 €
EL	2.759.809,00 €	1.339.231,00 €	1.500.000,00 €
ES	3.402.653,00 €	1.479.841,00 €	1.500.000,00 €
FI	7.856.652,00 €	2.980.884,00 €	2.980.884,00 €
FR	36.975.203,00 €	6.059.979,00 €	7.000.000,00 €
IE	1.309.769,00 €	604.625,00 €	1.000.000,00 €
IT	33.170.900,00 €	9.924.455,00 €	10.000.000,00 €
NL	44.595.116,00 €	8.000.000,00 €	8.000.000,00 €
PL	1.278.990,00 €	762.379,00 €	800.000,00 €
PT	574.778,00 €	478.790,00 €	500.000,00 €
RO	1.054.130,00 €	450.000,00 €	500.000,00 €
SE	6.747.540,00 €	1.100.000,00 €	1.100.000,00 €
SK	600.000,00 €	349.800,00 €	500.000,00 €
UK	4.684.162,00 €	1.682.767,00 €	1.651.219,00 €
Total	**201.076.034,00 €**	**87.544.690,00 €**	**87.173.479,00 €**

Part 2 : NEGOTIATION SUMMARIES

Acronym	**ARTEMOS**
Duration of the project (months)	36
Date of end of negotiation	6 December 2010
Project start date	01 April 2011

Project summary

Agile RF Transceivers and Front-Ends for Future Smart Multi-Standard COmmunications ApplicationS

This project aims at developing architecture and technologies for implementing agile radio frequency (RF) transceiver capacities in future radio communication products. These new architecture and technologies will be able to manage multi-standard (multi-band, multi-data-rate, and multi-waveform) operation with high modularity, low-power consumption, high reliability, high integration, low costs, low PCB area, and low bill of material (BOM).
This will not just require smart RF architectures in advanced CMOS and BiCMOS technology, but also need incorporating of e.g. MEMS technologies and novel simulation methodology for achieving these complex optimizations.
Multi-standard multi-band terminals integrating all standards (e.g. GSM/EDGE, UMTS, LTE) and beyond that additional wireless communications systems for mobile devices (such as Wi-Fi, GPS, WirelessHD, WirelessUSB, NFC, PMR, all digital TV standards, etc.) in a single radio architecture with the lowest number of external SAW or BAW filters and power amplifiers.
Frequency agile high dynamic range digital friendly RF architectures suitable for nanoscale (Bi)CMOS together with tuneable filters are the key innovations proposed for this project.
Today, the analog RF frontend simply duplicates the circuitry for each band. Due to the severe signal constraints in a cell phone and limitations of the current technologies and architectures, it is not possible to create an integrated solution.
A tunable RF frontend radio is required which can cover all bands and bandwidths in a range from 0.3GHz to 5GHz, meeting all specifications within a mobile device. This requires homogeneous or heterogeneous integration of a set of complete new tunable architectures and technologies (high-Q on-chip inductors, tunable MEMS capacitors, MEMS switches and resonators or tunable BAW/SAW filters and integrated passive devices processes) with existing (Bi)CMOS technologies.
The complexity requires new advancements in the simulation techniques and modelling aspects to enable these multiple new technologies.
The ARTEMOS consortium with partners in the full value-chain from semiconductor suppliers, system houses, application domain, research and universities, is confident that the realization of its ambitious objectives will assist Europe to achieve technological leadership in domains that are targeted by ENIAC.

Maximum eligible costs and public funding:

The negotiation concluded with the following eligible costs (final). The national funding figures are indicative until the establishment of the national grant agreements:

Partner	Country	Eligible cost	ENIAC JU Funding	National Funding

AALTO-Korkeakoulusaatio	FI	655.095,00 €	109.401,00 €	349.166,00 €
ART S.r.l.	IT	600.000,00 €	100.200,00 €	169.800,00 €
Cavendish Kinetics B.V.	NL	2.689.400,00 €	449.130,00 €	357.581,00 €
Commissariat à l'Energie Atomique et aux Energies Alternatives	FR	1.566.637,00 €	261.628,00 €	365.027,00 €
DICE GmbH & Co KG	AT	1.214.250,00 €	202.780,00 €	303.563,00 €
Ecole Superieure D'Electricite	FR	253.708,00 €	42.369,00 €	59.114,00 €
Epcos AG	DE	320.045,00 €	53.448,00 €	0,00 €
Epcos Nordic OY	FI	328.000,00 €	54.776,00 €	60.024,00 €
Fachhochschule Kärnten	AT	323.000,00 €	53.941,00 €	190.570,00 €
FF OO Forschungs & Entwicklungs GmbH	AT	262.000,00 €	43.754,00 €	154.580,00 €
Foundation for Research and Technology Hellas	EL	150.000,00 €	25.050,00 €	124.950,00 €
Infineon Technologies Austria AG	AT	989.000,00 €	165.163,00 €	247.249,00 €
Institut Telecom France	FR	494.287,00 €	82.546,00 €	411.741,00 €
Instituto de Telecomunicacoes	PT	235.932,00 €	39.401,00 €	196.531,00 €
Integrated Systems Development S.A.	EL	733.000,00 €	122.411,00 €	244.089,00 €
Iquadrat Informatica S.L.	ES	390.360,00 €	65.190,00 €	195.180,00 €
Johannes Kepler Universität Linz	AT	242.667,00 €	40.525,00 €	143.173,00 €
Lantiq A GmbH	AT	837.000,00 €	139.779,00 €	209.250,00 €
LEAT-CNRS	FR	154.800,00 €	25.852,00 €	128.949,00 €
Nokia OYJ	FI	1.088.000,00 €	181.696,00 €	199.104,00 €
Numonyx Italy S.R.L.	IT	1.967.500,00 €	328.573,00 €	525.178,00 €
NXP Semiconductors Belgium NV	BE	749.257,00 €	125.126,00 €	249.503,00 €
NXP Semiconductors France SAS	FR	3.856.411,00 €	644.021,00 €	320.082,00 €
NXP Semiconductors Netherlands BV	NL	1.247.400,00 €	208.316,00 €	108.676,00 €
PULSE Finland OY	FI	77.000,00 €	12.859,00 €	14.091,00 €
SAS DELFMEMS	FR	1.001.452,00 €	167.242,00 €	133.193,00 €
ST-Ericsson (Grenoble) SAS	FR	743.232,00 €	124.120,00 €	61.688,00 €
ST-Ericsson AT GmbH	DE	2.317.616,00 €	387.042,00 €	0,00 €
ST-Ericsson B.V.	NL	5.800.000,00 €	968.600,00 €	505.308,00 €
ST-Ericsson Belgium N.V.	BE	2.250.000,00 €	375.750,00 €	375.750,00 €
ST-Ericsson R&D OY	FI	245.000,00 €	40.915,00 €	44.835,00 €
Technische Universiteit Delft	NL	216.155,00 €	36.098,00 €	71.980,00 €
Technische Universiteit Eindhoven	NL	922.798,00 €	154.107,00 €	146.294,00 €
TESLA, akciova spolecnost	CZ	205.400,00 €	34.302,00 €	68.398,00 €
THALES Communications SA	FR	2.179.984,00 €	364.057,00 €	180.939,00 €
THALES Italia Spa	IT	1.245.000,00 €	207.915,00 €	414.585,00 €
Università Degli Studi Di Perugia	IT	900.000,00 €	150.300,00 €	254.700,00 €
Universitat Politecnica De Catalunya	ES	391.779,00 €	65.427,00 €	326.352,00 €
Uppsala Universitet	SE	97.470,00 €	16.277,00 €	0,00 €
Valtion Teknillinen Tutkimuskeskus	FI	650.410,00 €	108.618,00 €	346.669,00 €
Vysoke Uceni Technicke v Brne	CZ	343.450,00 €	57.356,00 €	286.094,00 €
Total		**40.934.495,00 €**	**6.836.061,00 €**	**8.543.956,00 €**

Acronym	**ENLIGHT**
Duration of the project (months)	36
Date of end of negotiation	6 December 2010
Project start date	01 March 2011

Project summary

Energy Efficient and Intelligent Lighting Systems

The lighting industry is currently going through a radical transformation, driven by both the rapid progress of Solid State Lighting (SSL) and semiconductors technologies, and the changing societal needs like sustainability, improved energy efficiency and CO2 reduction.
To overcome these immense challenges, the lighting industry has to adapt rapidly by collaborating in a supportive open-innovation eco-system, which can drive research and development to serve the new business needs.
The unlimited potential of LED lighting, like novel form factors and intelligent lighting systems have to be employed to address people's needs and to enhance people's life.
The main goal of the project EnLight – Energy Efficient and Intelligent Lighting Systems – is to exploit the full potential of Solid State Lighting through breakthrough innovations in non-conventional, energy efficient, and intelligent lighting systems, far beyond retrofit applications. Many are under the assumption that all the technologies to achieve this goal are available, however, everyone experiences in day-to-day life that functionalities and conveniences are failing (e.g. lights switching on and off unexpectedly). Significant technological innovations are still required in order to solve these shortcomings.
The major innovations of EnLight will cover three levels and their integrations:
The solutions level will focus on the user needs and requirements of all stakeholders, ensuring full interoperability and integration. Reaching mass-market acceptance within a few years is our main driver. This will further enable market introduction of intelligent LED lighting control systems by optimally using LED energy-efficient dimming and fast switching capabilities.
The systems level will focus on system integration, interoperability and costs of increased complexity. This comprises reliable task and activity sensors, sensing algorithms and a robust architecture and interfaces, needed for smart and intelligent lighting systems, including future, non-conventional luminaires, i.e. luminaires with a free form factor, not limited by retrofit solution constraints.

The components level will focus on the optimal utilization and integration of LEDs, optics, heat management systems and the integration of electronics and controls in modules, to achieve energy efficient LED engines and modules.
EnLight is built on European global leaderships on both semiconductors and lighting industry, ensuring this industry a bright future.
EnLight brings together a complete value chain needed for the success of SSL systems and novel solution business, ranging from LED manufacturers, semiconductors components (e.g. IC, sensors, drivers) developers, LED module manufactures, up to luminaire and ceiling makers and includes a large utility company. In this consortium, the two biggest lighting industry players – Philips Lighting and Osram – lead the way, and the prominent EU knowledge institutions and many innovative SMEs play an essential role. The EnLight consortium is well balanced and able to bring the best lighting solution forward.

The future is in applications of LEDs, based on the technology"s intrinsic qualities, leading to products that inspire and enable designers in ways conventional lighting could never do.

Maximum eligible costs and public funding:

The negotiation concluded with the following eligible costs (final). The national funding figures are indicative until the establishment of the national grant agreements:

Partner	Country	Eligible cost	ENIAC JU Funding	National Funding
ART S.r.l.	IT	375.000,00 €	62.625,00 €	106.125,00 €
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.	DE	1.355.794,00 €	226.418,00 €	1.129.376,00 €
Infineon Technologies AG	DE	4.115.816,00 €	687.341,00 €	1.164.776,00 €
NXP Semiconductors France SAS	FR	3.649.503,00 €	609.467,00 €	302.909,00 €
RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN	DE	398.652,00 €	66.575,00 €	332.077,00 €
Technische Universiteit Delft	NL	1.138.203,00 €	190.080,00 €	379.022,00 €
Technische Universiteit Eindhoven	NL	1.422.276,00 €	237.520,00 €	473.618,00 €
Uppsala Universitet	SE	97.470,00 €	16.277,00 €	0,00 €
Valtion Teknillinen Tutkimuskeskus	FI	981.547,00 €	163.918,00 €	523.165,00 €
Philips Lighting B.V.	NL	6.203.100,00 €	1.035.918,00 €	1.135.167,00 €
Applied Micro Electronics "AME" B.V.	NL	600.025,00 €	100.204,00 €	169.807,00 €
Fico B.V. /Besi	NL	400.000,00 €	66.800,00 €	73.200,00 €
Eagle Vision Systems B.V.	NL	991.000,00 €	165.497,00 €	250.753,00 €
I-NRG B.V.	NL	1.285.000,00 €	214.595,00 €	335.755,00 €
Philips Electronics Nederland B.V.	NL	4.719.361,00 €	788.133,00 €	863.643,00 €
Plugwise B.V.	NL	1.091.055,00 €	182.206,00 €	241.689,00 €
Nederlandse Organisatie voor toegepast natuurwetenschappelijk onderzoek -TNO	NL	1.093.565,00 €	182.625,00 €	364.157,00 €
BJB GmbH & Co.KG	DE	493.208,00 €	82.366,00 €	139.578,00 €
Insta Elektro GmbH	DE	1.410.833,00 €	235.609,00 €	399.266,00 €
NXP SEMICONDUCTORS GA GMBH	DE	1.801.350,00 €	300.825,00 €	509.781,00 €
OSRAM GMBH	DE	1.556.037,00 €	259.858,00 €	440.358,00 €
COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	FR	2.301.961,00 €	384.427,00 €	536.357,00 €
LEGRAND FRANCE SA	FR	941.378,00 €	157.210,00 €	78.134,00 €
Rockwool France	FR	213.090,00 €	35.586,00 €	17.686,00 €
UNIVERSITA DEGLI STUDI DI PERUGIA	IT	360.000,00 €	60.120,00 €	101.880,00 €
ENEL DISTRIBUZIONE S.P.A.	IT	939.907,00 €	156.964,00 €	300.489,00 €
Helvar Oy Ab	FI	240.000,00 €	40.080,00 €	32.967,00 €
PKC Electronics	FI	398.000,00 €	66.466,00 €	72.834,00 €
There Corporation Ltd.	FI	243.000,00 €	40.581,00 €	117.369,00 €
Valopaa Oy	FI	500.000,00 €	83.500,00 €	241.500,00 €
Total		**41.316.131,00 €**	**6.899.794,00 €**	**10.833.438,00 €**

Acronym	**EPAMO**
Duration of the project (months)	36
Date of end of negotiation	6 December 2010
Project start date	01 April 2011

Project summary

Energy-efficient piezo-MEMS tunable RF front-end antenna systems for mobile devices

Current and future wireless communication systems need to cope with the increased number of frequency bands and advanced mobile phone standards like LTE supporting high data rates. At the same time mobile phone systems have to become more energy efficient in order to contribute to the Grand Challenge "CO2-reduction". One major limitation of today's mobile phones is the poor impedance matching of the antenna to the RF-front-end section of the mobile phone leading to overall poor antenna efficiency.
Different user cases (e.g. shielding of RF radiation by hand / head / environment effects e.g. usage of mobile phone in a car), a strong miniaturization need in form factors of antenna systems, and the increase in frequency spectrum to be covered by the antenna system (700 to 2600 MHz later up to 3600 MHz) result in an overall poor energy efficiency of today's RF-sections of mobile phone systems, lead to a significant number of dropped calls, and limit the overall capacity of mobile phone networks with respect to the number of users and / or data volume to be transmitted. In addition the ongoing trend towards higher miniaturization and integration is an ever increasing challenge in the design of complex RF systems e.g. due to critical RF interaction on signal lines. By introducing tuneable RFelements, the overall system architecture can be simplified leading also to a significant cost reduction for future RF-systems. Therefore the development of tuneable RF components is a key enabler for future highly advanced RF systems and essential to strengthen the leading position of the European RF-community and industry in the worldwide competition.
The EPAMO project will address the four main challenges of providing future high performance RF-systems, energy efficient mobile communication systems, highly miniaturized and integrated RF components, and cost efficient solutions to the mobile phone industry by exploring and implementing multiple innovative process and testing technologies to realise an adaptive antenna front-end system for 4G mobile phones. Due to closed-loop antenna tuning the radio power levels can be reduced in the mobile phone by more than 50%, in the base stations a saving of at least 10% is possible. Knowing that the data volume will continuously increase, the EPAMO project will help to utilize the installed mobile phone infrastructure in a more efficient way and to reduce the number of new base stations to be installed to cover the future data traffic. In total it is estimated that the implementation of this technology has a global energy-saving potential of more than 10.000 GWh per year referred to a constant data volume to be transmitted.
EPAMO has the objective to explore the potential of unprecedented ultra-high density RFMEMS switch arrays to be integrated in an energy-efficient agile RF transceiver with reconfigurable antenna. Compared to today's approaches for RF-MEMS switches utilizing electrostatic actuation, key cross-cutting More-than-Moore and heterogeneous integration technologies are high-force piezoelectric MEMS actuators based on Lead Zirconate Titanate (PZT) thin films, high reliability metallic contact switches, and low-loss silicon and composite glass-silicon 8" wafer substrates. With this technology it will be possible to realize galvanic switches compared to today's capacitive switches extending the application field for RF-MEMS switches significantly. Fine pitch through-wafer vias will allow a high-density 3D system integration in ultra-small RF module substrates with integrated components. The project covers the whole

development process including simulation / modelling, design and layout, material development, process technology development, device measurement and evaluation, and reliability / quality testing. Tests will be performed on wafer level, on component level, on module level, and on system level.

Maximum eligible costs and public funding:

The negotiation concluded with the following eligible costs (final). The national funding figures are indicative until the establishment of the national grant agreements:

Partner	Country	Eligible cost	ENIAC JU Funding	National Funding
aixACCT Systems GmbH	DE	398.636,00 €	66.572,00 €	169.207,00 €
Boschman Technologies B.V.	NL	749.171,00 €	125.112,00 €	212.015,00 €
Christian-Albrechts-Universitaet zu Kiel	DE	424.808,00 €	70.943,00 €	353.446,00 €
Epcos AG	DE	1.372.543,00 €	229.215,00 €	457.057,00 €
Epcos Netherlands B.V.	NL	1.597.846,00 €	266.840,00 €	292.406,00 €
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.	DE	1.453.659,00 €	242.761,00 €	1.210.898,00 €
Landshut Silicon Foundry GmbH	DE	661.770,00 €	110.516,00 €	220.369,00 €
MASER Engineering B.V.	NL	748.152,00 €	124.941,00 €	211.727,00 €
Okmetic Oyj	FI	848.600,00 €	141.716,00 €	155.294,00 €
Picosun Oy	FI	600.000,00 €	100.200,00 €	289.800,00 €
Plan Optik AG	DE	473.331,00 €	79.046,00 €	204.952,00 €
Silex Microsystems AB	SE	850.000,00 €	141.950,00 €	283.050,00 €
SolMateS B.V.	NL	745.875,00 €	124.561,00 €	211.083,00 €
TNO Defensie en Veiligheid (TNO Defence, Security and Safety)	NL	831.283,00 €	138.824,00 €	276.817,00 €
University of Twente	NL	562.829,00 €	93.992,00 €	187.422,00 €
Valtion Teknillinen Tutkimuskeskus	FI	1.002.000,00 €	167.334,00 €	534.066,00 €
Total		**13.320.503,00 €**	**2.224.524,00 €**	**5.269.609,00 €**

Acronym	**ERG**
Duration of the project (months)	36
Date of end of negotiation	6 December 2010
Project start date	01 June 2011

Project summary

ENERGY FOR A GREEN SOCIETY: FROM SUSTAINABLE HARVESTING TO SMART DISTRIBUTION. EQUIPMENTS, MATERIALS, DESIGN SOLUTIONS AND THEIR APPLICATIONS

The research, development and demonstration activities planned for the ERG project focus on the solar energy supply chain, starting form solar cells and proceeding along with innovative energy extraction (harvesting) techniques, high efficiency power conversion and finally managing the energy distribution inside a smart grid, with the target of different classes of applications, from house to small area, as well as application specific "local grid" (healthcare, automotive, etc.).
By considering the full solar energy supply chain, we expect to produce relevant improvements of the industrial state-of-the-art in the efficiency of solar cells, in the optimization of energy generated by photovoltaic systems, in the loss reduction of power converters and finally in energy management strategy.
At the initial chain-link of the energy value chain, the project aims to design and develop a set of innovative solar cells. In particular we primarily target the development of ultra-thin (20 micron) Si wafer PV cells, Si heterojunction cells
(tandem/multijunction and heterojunction contacts), novel architectures (e.g. backcontact), novel materials (for Si heterojunctions, ARC, and passivation dielectrics), novel approaches for screen printing and laser processing, with focus to the case of back-contact cells. As a promising low-cost alternative to Si, ERG will pursue the goal of totally printable dye-sensitized-solar cells (DSSC). This will includes (a) printable electrolyte (to replace liquid electrolyte), (b) advanced TiO2 electrode and (c) counter electrode to meet high performance DSSC applications. The overall objective is to demonstrate DSSC products for commercial applications.
The next downward chain-link addressed by the project deals with optimization of the energy generated by photovoltaic systems by focusing on power management electronics for silicon cell panels and on micro electromechanical systems for
Concentrated cells (CPV). The complete supply chains will be considered for optimum energy exploitation by Maximum Power Point Tracking (MPPT) and power conversion on module / segment levels for PV and also CPV solar generators. The architecture study will elaborate different profiles of end-users, including direct grid connection, energy storage option and E-mobility support.
As the final chain-link is concerned, the project will develop behavioural models for the individual components of the "Smart Grid". This allows the development of optimal energy dispatching and battery charging algorithms. These algorithms will obtain their input from sensors distributed over the network, with typically, but not exclusive, a wireless communication infrastructure.
A full set of demonstrators, including innovative PV cells, novel conversion systems for PV and CPV inverters, and network demonstrators based on a household application and an industrial application will complete the project deliverables.

Maximum eligible costs and public funding:

The negotiation concluded with the following eligible costs (final). The national funding figures are indicative until the establishment of the national grant agreements:

Partner	Country	Eligible cost	ENIAC JU Funding	National Funding
ACONDICIONAMIENTO TARRASENSE ASSOCIACION	ES	260.860,00 €	43.564,00 €	0,00 €
ALMA MATER STUDIORUM-UNIVERSITA DI BOLOGNA	IT	500.000,00 €	83.500,00 €	166.500,00 €
APPLIED MATERIALS ITALIA SRL	IT	1.500.000,00 €	250.500,00 €	499.500,00 €
Boschman Technologies B.V.	NL	804.251,00 €	134.310,00 €	0,00 €
Compel Electronics S.p.A.	IT	1.074.000,00 €	179.358,00 €	315.142,00 €
CONSIGLIO NAZIONALE DELLE RICERCHE	IT	600.848,00 €	100.342,00 €	200.082,00 €
CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LA NANOELETTRONICA	IT	900.001,00 €	150.300,00 €	299.700,00 €
Enecsys Limited	UK	580.500,00 €	96.944,00 €	193.306,00 €
FRAUNHOFER-GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V	DE	550.000,00 €	91.850,00 €	458.150,00 €
Infineon Technologies AG	DE	3.388.587,00 €	565.894,00 €	789.541,00 €
NXP Semiconductors Netherlands BV	NL	1.184.100,00 €	197.745,00 €	0,00 €
ON SEMICONDUCTOR BELGIUM BVBA	BE	2.000.701,00 €	334.117,00 €	866.304,00 €
Politecnico di Torino	IT	900.000,00 €	150.300,00 €	299.700,00 €
Powertec s.r.o., Bratislava	SK	300.000,00 €	50.100,00 €	99.900,00 €
RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN	DE	288.993,00 €	48.262,00 €	240.731,00 €
SINCROTRONE TRIESTE SCPA = ELETTRA	IT	300.000,00 €	50.100,00 €	99.900,00 €
Slovak University of Technology in Bratislava	SK	300.000,00 €	50.100,00 €	249.900,00 €
SMA Solar Technology AG	DE	1.227.443,00 €	204.983,00 €	285.994,00 €
Solarprint Limited	IE	464.100,00 €	77.505,00 €	232.050,00 €
SOLARTEC AG	DE	780.750,00 €	130.385,00 €	338.065,00 €
STMicroelectronics srl	IT	3.000.000,00 €	501.000,00 €	880.560,00 €
TECHNISCHE UNIVERSITAET CHEMNITZ	DE	198.360,00 €	33.126,00 €	165.234,00 €
TELEFUNKEN SEMICONDUCTORS GMBHCOKG	DE	3.298.924,00 €	550.920,00 €	768.649,00 €
The University of Sheffield	UK	60.000,00 €	10.020,00 €	49.980,00 €
UNIVERSITA DEGLI STUDI DI CATANIA	IT	300.000,00 €	50.100,00 €	99.900,00 €
UNIVERSITA DELLA CALABRIA	IT	501.997,00 €	83.833,00 €	167.165,00 €
UNIVERSITY COLLEGE CORK, NATIONAL UNIVERSITY OF IRELAND, CORK	IE	447.269,00 €	74.694,00 €	372.575,00 €
Total		**25.711.684,00 €**	**4.293.851,00 €**	**8.138.528,00 €**

Acronym	**HEECS**
Duration of the project (months)	36
Date of end of negotiation	6 December 2010
Project start date	01 March 2011

Project summary

High Efficiency Electronics Cooking Systems

The HEECS project will answer the need to increase energy efficiency, developing a smart, controlled and highly efficient Solid state cooking device and give significant contributions to standards.
This cooking appliance will represent a breakthrough innovation which currently does not exist on the market. HEECS will deliver a new concept Microwave Oven.
The main project scope is to enhance energy efficiency by more than 25% in Microwave ovens (MWOs) across any range of food to be heated or cooked at home. According to this scope, breakthrough technologies will be researched and developed according to 4 HEECS main project objectives: 1) New and improved semiconductor technologies mainly focused on innovative high frequency power solid state devices. 2) Improved thermal management systems to efficiently cool the high frequency power transistor package, and make use of the dissipated heat energy in an efficient way. 3) Intelligent electromagnetic (EM) field adjustment and high frequency controls, in order to better distribute the field intensity within differing food types, thereby heating the food appropriately and decreasing losses. 4) Optimized MWO technology configuration and system architecture delivering optimum feeding and efficiency of the MWO through enhanced signal conditioning. Matching the overall ENIAC objectives, all the electronic parts of the solid state cooking device, including small signal board (frequency synthesizer, High speed RF switching, micro controller), Switched mode power supply unit, high frequency power amplification stages, RF sensing and coupling, will be built with miniaturised circuits. The thermal management of the RF power devices will also incorporate thermal / material aspects relevant to ensure reliability and miniaturisation within the hybrid transistor package. The project will also deliver TCAD, and multi-physics tools enabling design of new technologies related to RF Hybrid circuit integration, phased array controls, and thermal design of High Frequency power transistor packages.

Maximum eligible costs and public funding:

The negotiation concluded with the following eligible costs (final). The national funding figures are indicative until the establishment of the national grant agreements:

Partner	Country	Eligible cost	ENIAC JU Funding	National Funding
Bergh Hybrid Circuits BV	NL	338.330,00 €	56.501,00 €	0,00 €
CHALMERS TEKNISKA HOEGSKOLA AB	SE	196.910,00 €	32.884,00 €	124.644,00 €
ComHeat Microwave AB	SE	175.095,00 €	29.241,00 €	75.816,00 €
NXP Semiconductors Netherlands B.V.	NL	1.122.699,00 €	187.491,00 €	0,00 €
Plextek Limited	UK	536.000,00 €	89.512,00 €	166.488,00 €
Politechnika Warszawska	PL	241.400,00 €	40.314,00 €	144.840,00 €
Technische Universiteit Delft	NL	615.802,00 €	102.839,00 €	0,00 €

Università degli Studi di Padova	IT	549.200,00 €	91.716,00 €	134.567,00 €
Whirlpool Europe Srl	IT	697.992,00 €	116.565,00 €	158.184,00 €
Whirlpool Sweden AB	SE	519.950,00 €	86.832,00 €	95.151,00 €
Total		**4.993.378,00 €**	**833.894,00 €**	**899.690,00 €**

Acronym	**MOTORBRAIN**
Duration of the project (months)	36
Date of end of negotiation	6 December 2010
Project start date	01 April 2011

Project sunnary:

Nanoelectronics for Electric Vehicle Intelligent Failsafe PowerTrain

The intention of the MotorBrain project is to develop sustainable drive train technologies and control concepts/ platforms for inherently safe and highly efficient Electric Vehicle (EV) powertrains of the 3rd Generation. The envisaged EV-Powertrain will enable significant steps ahead in terms of:

• Overall energy efficiency: The next generation EV-Powertrains shall improve energy efficiency by 20%.

• Development of novel smart and intrinsic failsafe electrical powertrain concepts: Powertrain concepts will not only focus on new highly efficient smart motor management systems and torque-dense motor concepts, furthermore intelligent integration concepts for passive components, power converters as well as new concepts for modular storage systems will be derived and verified. By exploding the benefits of higher integrated subsystems of the EV-powertrain it is expected to further enhance the efficiency and reliability of EV-Powertrains without impeding production costs. Moreover is it envisaged to strengthen the sustainability by improving recyclability and alleviating the dependency on rare-earth magnets.

• Deriving new EV architectures, sensors and microcontroller concepts/ platforms: Core aim of the MotorBrain Project is to strengthen the EV related industries by achieving technological leading positions through the development of intrinsic fail-safe powertrains and energy management systems in order to enhance the overall reliability, safety and efficiency of EVs. In particular the safety of the next Generation

EV will be improved using; redundancy concepts at different subsystem levels, sensors in combination with advanced control mechanisms as well as multi-core ECU's. Intelligence will be enhanced through embedded software in a highly distributed control system, taking into account the interaction between hardware and software within the physical environment.

The project addresses the highly challenging research on power and high voltage electronic systems beyond state of the art. Smart miniaturized systems including subsystems, systemlayers and vehicle demonstrators will be derived and via the interaction of all systems they comprise the full supply chain of electric drives for EVs. The research on electric vehicles has already brought visible progress in the context of marketable models and technical properties such as radius of mobility and efficiency of the components. Nevertheless, in terms of market share it is even below small series. Issues that occurred to the vision of fully electric vehicles in the high-volume market are known and addressable through the MotorBrain developments. Significant efforts are intended in research for highly safe, reliability and efficiency EV-powertrains, e.g. by lightweight engines and their optimal control. Moreover, new solutions are becoming attractive against the backdrop of short resources such as rare earths required for permanent-magnet motors.

Conventional 3-phase electric motors result in the loss of the driving energy in case of failure of a single phase or a component in the converter or the control units. Even systems with multiple drives can lead to steering and traction problems that affect the safety of the vehicle dramatically. In order to eliminate potential accidents that endanger the necessary confidence in the electrical mobility, fault-tolerant drive systems and control architectures need to be explored.

In the meantime significant progress in the individual components of EV's has been made. For bringing this new technology on the road research need to focus on the high integration ENIAC-2010-1 Full Project Proposal MotorBrain of the subsystems. The necessary holistic approach for efficient, secure and reliable systems will eventually allow the market penetration in the high-volume manufacturing.
The consideration of vehicle weight and range requirements leads to the need of scalable drive train concepts. MotorBrain will enhance the energy efficiency of the drivetrain through its integrated approach. Future electric cars need to remain functional and allow at least a safe exit from the traffic zone even in the event of errors. Utilizing cost-efficient, powerful multi-core processors motor brain will pave the way for future scalable, configurable integrated drivetrains for EVs.
Besides the already mentioned project goals MotorBrain expects the following advantages over the state-of-the-art in EV drivetrains:
• Cost reduction up to 25%
• Increasing the operating range up to 15-20% (through improved efficiency and weight reduction)
• Increased security through distributed drivetrain and improved integration
By increasing energy efficiency, reliability and safety of electric vehicles combined with significant cost reductions (e.g. through new integrated packaging approaches for the joint use of the engine cooling system for power electronics, and new manufacturing processes for motors), and opening up of the standardization potentials for different levels of control,
MotorBrain shall enable the market breakthrough for electro mobility. In detail this progress will be achieved through the following developments:
• Improvements in efficiency and security are achieved by implementing a distributed power train. The distributed propulsion enables new functions based on a sustained understanding of the driving forces and their associated requirements for the energy converter.
• The integration of energy storage to the drive unit will result in significant advantages over the current state (with a rather large power distribution network, which causes serious EMC problems through high currents).
• New conversion topologies, such as direct power conversion or adaptation of battery to the engine, reduce the number of required active switching elements and leads to a simplified and more robust design.
• In addition to the integration of components a sustainable approach for temperature management will be developed, where in particular the limited temperature range of Li-ion batteries will be taken into account.
• The development of a "smart" control system, including the development of an intelligent drivetrain communication network, is used to further improve the operating of the drive and energy management.
Since the development plans are challenging and ambitious - MotorBrain under the lead of Infineon - has brought together some of the most powerful European companies and research institutes, such as VW, CRF, Siemens, ZF, ST, AVL. The consortium as a hole provides an outstanding mix of knowledge to meet needs of the next Generations EVPowertrain.
With MotorBrain the Vision of a safe, efficient European EV for everyone seems to be one step closer.

Maximum eligible costs and public funding:

The negotiation concluded with the following eligible costs (final). The national funding figures are indicative until the establishment of the national grant agreements:

Partner	Country	Eligible cost	ENIAC JU Funding	National Funding
AllGreenVehicles	NL	1.298.750,00 €	216.891,00 €	367.546,00 €
Arcotronics	IT	1.500.000,00 €	250.500,00 €	462.000,00 €
Centro Ricerche Fiat S.c.p.A.	IT	2.699.920,00 €	450.887,00 €	836.523,00 €
E3/DC GmbH	DE	840.438,00 €	140.353,00 €	279.866,00 €
FH Joanneum Gesellschaft mbH	AT	660.000,00 €	110.220,00 €	389.400,00 €
Greenpower	ES	273.003,00 €	45.592,00 €	50.830,00 €
HÖGANÄS AB (Publ)	SE	2.625.175,00 €	438.404,00 €	421.339,00 €
IMT Bucharest	RO	180.072,00 €	30.072,00 €	150.000,00 €
Infineon AG	DE	5.181.062,00 €	865.237,00 €	1.207.187,00 €
Infineon Austria	AT	2.581.998,00 €	431.194,00 €	645.500,00 €
Infineon Romania	RO	621.118,00 €	103.727,00 €	300.000,00 €
Institut mikroelektronickych aplikaci s.r.o.	CZ	122.700,00 €	20.491,00 €	40.859,00 €
Istituto P.M. Srl	IT	19.990,00 €	3.338,00 €	6.660,00 €
NXP Semiconductors	NL	4.176.690,00 €	697.507,00 €	764.334,00 €
OFFIS e.V.	DE	593.039,00 €	99.038,00 €	494.001,00 €
Österreichisches Forschungs- und Prüfzentrum Arsenal GmbH	AT	369.000,00 €	61.623,00 €	217.709,00 €
Politecnico di Torino	IT	1.260.000,00 €	210.420,00 €	419.580,00 €
QinetiQ Ltd	UK	981.000,00 €	163.827,00 €	326.673,00 €
Robert Seuffer GmbH & o. KG	DE	1.428.830,00 €	238.615,00 €	118.888,00 €
ROBOX	IT	600.015,00 €	100.203,00 €	170.815,00 €
STMicroelectronics srl	IT	2.841.800,00 €	474.581,00 €	828.820,00 €
Technical University Dresden	DE	982.727,00 €	164.115,00 €	818.612,00 €
The University of Sheffield	UK	427.862,00 €	71.453,00 €	249.444,00 €
Universidad de Sevilla	ES	196.927,00 €	32.887,00 €	164.040,00 €
University of Applied Sciences Amberg-Weiden	DE	412.834,00 €	68.943,00 €	342.652,00 €
Vysoke Uceni Technicke v Brne	CZ	101.321,00 €	16.921,00 €	84.400,00 €
AVL List GmbH	DE	946.200,00 €	158.015,00 €	236.550,00 €
Siemens	DE	1.300.000,00 €	217.100,00 €	302.900,00 €
ZF Friedrichshafen AG	DE	1.200.000,00 €	200.400,00 €	279.600,00 €
Egston System Electronics GmbH	AT	180.000,00 €	30.060,00 €	45.000,00 €
Total		36.602.471,00 €	6.112.613,00 €	11.021.728,00 €

Acronym	**NANOCOM**
Duration of the project (months)	36
Date of end of negotiation	6 December 2010
Project start date	01 February 2011

Project summary:

Reconfigurable Microsystem Based on Wide Band Gap Materials, Miniaturized and Nanostructured RF-MEMS

Future wireless systems will have to achieve self-reconfigurable operations for real time efficient optimization of their performances. RF-MEMS switches will allow facing this challenge and opening the route towards reconfigurability of high power systems, but their reliability is still nowadays an issue. The aim of NANOCOM project is to develop a new approach for future generation of smart systems by introducing nanostructured materials capacitive MEMS to improve the reliability by one order of magnitude. NANOCOM aims to address the dielectric charging effect which limits the lifetime and to enhance the thermal performances of the device, increasing the power handling capability. The main objectives of NANOCOM are:
1) explore new nanostructured materials to be used as dielectrics in RFMEMS devices to achieve higher reliable devices by minimizing charging effects and improving thermal dissipation under high power. High-k dielectrics such as PZT with a fine control of the nanostructure and composites, aligned Carbon Nanotubes in a Si3N4 matrix and doped poly crystalline diamond as well as diamond nanopillars;
2) develop the design methodologies and technological process to achieve the integration of these MEMS switches in phase shifters and SPDT devices;
3) develop gas and pressure sensors and actuators of unprecedented performance that can be integrated with RF components of the same type to perform complex functions such as sensing/actuating combined with wireless transmission of data. Components of this type can improve the energy efficiency of systems by leading to efficient power supplies with intelligent energy control while allowing at the same time an increase of safety and functionality.
4 demonstrators will be fabricated by implementing them in a reconfigurable T/R module, a tunable filter and a reflect array antenna and a nitride-based sensor and actuator.
The consortium possesses the experience to undertake this ambitious task. It is composed of 16 partners originating from 6 European countries half of them is industrial representation and half of them coming from research institute and university. It merges outstanding research groups with expertise in the fields of interest from the material to the system design and fabrication.

Maximum eligible costs and public funding:

The negotiation concluded with the following eligible costs (final). The national funding figures are indicative until the establishment of the national grant agreements:

Partner	Country	Eligible cost	ENIAC JU Funding	National Funding
CEA Institut LIST	FR	566.187,00 €	94.553,00 €	131.921,00 €
Chalmers Tekniska Högskola AB	SE	742.000,00 €	123.914,00 €	0,00 €
Foundation for Research and Technology Hellas	EL	400.000,00 €	66.800,00 €	333.200,00 €
Global Nanotechnologies S.A. for the Design, Development, Production and Trading of Nanotechnology Materials	EL	217.440,00 €	36.312,00 €	72.408,00 €

Institut d'Electronique Fondamentale	FR	198.600,00 €	33.166,00 €	165.434,00 €
National & Kapodistrian University of Athens	EL	180.000,00 €	30.060,00 €	149.944,00 €
National Research and Development Institute for Microtechnologies IMT-Bucharest	RO	252.940,00 €	42.241,00 €	0,00 €
Smart High Tech AB	SE	613.000,00 €	102.371,00 €	0,00 €
Thales Research & Technology - Fance	FR	1.797.162,00 €	300.126,00 €	149.164,00 €
Thales Systèmes Aéroportés	FR	90.773,00 €	15.159,00 €	7.534,00 €
TopGaN	PL	295.000,00 €	49.265,00 €	171.985,00 €
Uppsala Universitet	SE	97.470,00 €	16.277,00 €	0,00 €
Prisma Electronics SA	EL	120.000,00 €	20.040,00 €	39.960,00 €
Total		**5.570.571,00 €**	**930.285,00 €**	**1.221.550,00 €**

Acronym	**NANOTEG**
Duration of the project (months)	36
Date of end of negotiation	6 December 2010
Project start date	01 February 2011

Project summary:

Nanostructured ThermoElectric Systems for Green Transport & Energy Efficient Applications

The concept of NANOTEG is to solve crucial cooling and energy-management issues in transport and energy-efficient applications, based on the technical leverage enabled by highly efficient nanostructured ThermoElectric (TE) modules compatible with high volume fabrication processes.
Several relevant industrial demonstrators will be produced to create a strong impact in two identified application domains: Automotive and Avionics.
This main objective is supported by the development of two technical pillars:
- Nanostructured TE materials that are highly efficient (high ZT) and compatible with existing high volume fabrication process.
Several routes of applied research will be developed on nanostructured TE modules combining different fabrication processes, all industry-scalable (sputtering, nanocomposite, printing), materials (Bi2Te3, skutterudite, metal oxide) and "nano-approaches" (superlattices, nanoinclusions)
- Innovative packaging and integration solutions, allowing the integration of the nano-TE materials into highly efficient modules (high CoP) at the core of the system-level demonstrators.
Innovative applied research on integration, packaging and interconnect technologies will be developed to guarantee the high efficiency of the TE modules and ensure the short time to market implementation of the project results. To satisfy different end-user needs, different packaging concepts (internal or external TEC integration), geometries, Thermal Interface Materials, underfilling and interconnect technologies will be developed in complete accordance to each demonstrator specifications.
The NANOTEG consortium (14 partners from 8 European ENIAC-member States) gathers all the competences required to achieve these objectives. It is well balanced and involves all the supply chain partners in order to anticipate the cost-effective introduction of these new technologies and future products on the market.

Maximum eligible costs and public funding:

The negotiation concluded with the following eligible costs (final). The national funding figures are indicative until the establishment of the national grant agreements:

Partner	Country	Eligible cost	ENIAC JU Funding	National Funding
ACONDICIONAMIENTO TARRASENSE ASSOCIACION	ES	246.069,00 €	41.094,00 €	0,00 €
Biometric Technology Solutions Limited	IE	398.400,00 €	66.533,00 €	0,00 €
Catalan Institute of Nanotechnology	ES	350.026,00 €	58.454,00 €	0,00 €
Centre national de la Recherche Scientifique	FR	300.409,00 €	50.168,00 €	250.241,00 €

Centro Ricerche Fiat S.c.p.A.	IT	932.280,00 €	155.691,00 €	256.659,00 €
CIDETE INGENIEROS SL	ES	132.600,00 €	22.144,00 €	0,00 €
Commissariat à l'Energie Atomique et aux Energies Alternatives	FR	505.872,00 €	84.481,00 €	117.868,00 €
Infineon Technologies AG	DE	0,00 €	0,00 €	0,00 €
INFINEON TECHNOLOGIES AUSTRIA AG	DE	0,00 €	0,00 €	0,00 €
Micropelt GmbH	DE	120.000,00 €	20.040,00 €	0,00 €
Panco GmbH	DE	209.637,00 €	35.009,00 €	0,00 €
Smart High Tech AB	SE	733.000,00 €	122.411,00 €	100.000,00 €
Thales Avionics	FR	430.327,00 €	71.865,00 €	35.717,00 €
Thales Research & Technology - Fance	FR	1.182.235,00 €	197.433,00 €	98.125,00 €
UNINOVA - Instituto de Desenvolvimento de Novas Tecnologias	PT	338.846,00 €	56.587,00 €	282.259,00 €
NCSR "Demokritos"	EL	209.580,00 €	35.000,00 €	0,00 €
Total	**#N/A**	**6.089.281,00 €**	**1.016.910,00 €**	**1.140.869,00 €**

Acronym	**PARSIMO**
Duration of the project (months)	36
Date of end of negotiation	6 December 2010
Project start date	1 March 2011

Project summary

Partitioning and Modelling of System in Package

Integration of heterogeneous systems in a package (SiP) allows smaller, smarter and more energy efficient products for many applications. Through SiPs, even small or medium-sized enterprises could gain access to the development of technologically advanced, miniaturized products. However, to date, the lack of appropriate design methodologies and flows hinders the efficient development of SiPs. **PARSIMO** aims at enabling first time right design of heterogeneous SiP, which can contain sensors, MEMS, RF or other parts beside the micro and nano-electronics. In order to handle complex systems, models and modelling methods will be developed which improve the modelling accuracy of sensitive SiP parts while reducing simulation time by orders of magnitude. In addition, partitioning methods will be investigated to enable cost, performance and power optimisation at early design stages. Furthermore, procedures for the direct data exchange to packaging tools will be developed, so that a complete design flow can be established as basis for automated, fast and cost efficient manufacturing of SiP based products. **PARSIMO** aims at initiating standardization, which will open the application of SiP technology for innovative products of European SME and industry. The developed design methodology will reduce design time by several months and significantly save development costs. Four industry-driven demonstrators from the aviation and wireless communication domains emphasize the relevance of SiP technology for future products and the need for the design methodology addressed in **PARSIMO**.

Maximum eligible costs and public funding:

The negotiation concluded with the following eligible costs (final). The national funding figures are indicative until the establishment of the national grant agreements:

Partner	Country	Eligible cost	ENIAC JU Funding	National Funding
Coventor SARL	FR	1.211.088,00 €	202.252,00 €	161.075,00 €
ESIEE Engineering	FR	368.283,00 €	61.503,00 €	306.780,00 €
Instytut Technologii Elektronowej	PL	476.190,00 €	79.524,00 €	285.714,00 €
Laboratoire de Microelectronique et de Physique de Semiconducteurs	FR	265.505,00 €	44.339,00 €	221.166,00 €
Politechnika Wroclawska	PL	266.400,00 €	44.489,00 €	159.840,00 €
SARAS technology Ltd	UK	353.000,00 €	58.951,00 €	99.899,00 €
Silvaco Europe Ltd	UK	1.345.800,00 €	224.749,00 €	263.777,00 €
Thales Airborne Systems	FR	189.447,00 €	31.638,00 €	15.724,00 €
University of Sheffield	UK	400.000,00 €	66.800,00 €	333.200,00 €
Total		**4.875.713,00 €**	**814.244,00 €**	**1.847.175,00 €**

Acronym	**TOISE**
Duration of the project (months)	36
Date of end of negotiation	6 December 2010
Project start date	3 January 2011

Project summary

Trusted Computing for European Embedded Systems

For the future European applications such as Smart Grids for electricity network, smart low energy controlled home appliance, environmental or infrastructure sensor networks, and more generally management of trusted components, more security over communication networks and wireless communications, a number of technologies need to be developed and put in place to make the solutions smarter and more secure. TOISE proposes to address the secure tamper resistant solutions needed by the related embedded applications. Trusted Computing now in practise for the PC and workstation area provides a proven approach face to new attacks, by implementing a chain of authentication and integrity from the boot of the computing platform to the applications set up.
The objective of TOISE is to define, develop and validate trust hardware and firmware mechanisms applicable both to lightweight embedded devices and as security anchors within related embedded platforms.
The aim is to maintain Europe as a worldwide player in the field of efficient implementation of secure integrated devices to address the future European applications. A large initiative is proposed to align a common European position in the area. Several of TOISE partners are participating to related standardisation working groups, such TOISE will allow developing and promoting European solutions in non-yet harmonised bodies.
TOISE brings together European and manufacturing based Semiconductors such STMicroelectronics and Numonyx and Systems actors such Eads, Gemalto, Helenic Aerospace, Proton and Thales, to develop safe and secure solutions. SME develop enabling blocks as IP: Secure IC and Magillem Design. SME contribute to apply the technology to the related targeted applications: AZCom and TST. Cea Leti as security evaluation centre performs some security tests. Seven research labs from the participating countries develop the further enabling research.

Maximum eligible costs and public funding:

The negotiation concluded with the following eligible costs (final). The national funding figures are indicative until the establishment of the national grant agreements:

Partner	Country	Eligible cost	ENIAC JU Funding	National Funding
Agencia Estatal Consejo Superior de Investigaciones Científicas	ES	382.729,00 €	63.916,00 €	315.270,00 €
AZCOM Technology Srl	IT	583.000,00 €	97.361,00 €	164.989,00 €
Commissariat a l'energie atomique et aux energies alternatives (CEA)	FR	2.389.837,00 €	399.103,00 €	556.832,00 €
EADS CASSIDIAN SAS (EADS Defense and Security Systems SAS)	FR	630.400,00 €	105.277,00 €	52.323,00 €
EADS France Innovation Works SAS	FR	242.152,00 €	40.439,00 €	20.099,00 €
GEMALTO SA	FR	1.843.942,00 €	307.938,00 €	153.047,00 €
Hellenic Aerospace Industry SA	EL	499.789,00 €	83.465,00 €	166.430,00 €
Institut Telecom ParisTech	FR	435.120,00 €	72.665,00 €	362.455,00 €
Institute of Communication and Computer Systems	EL	250.000,00 €	41.750,00 €	208.250,00 €

Magillem Design Services	FR	445.927,00 €	74.470,00 €	59.308,00 €
Numonyx Srl	IT	1.615.000,00 €	269.705,00 €	434.045,00 €
Politecnico di Milano	IT	510.250,00 €	85.212,00 €	169.913,00 €
Proton World International NV	BE	1.132.666,00 €	189.155,00 €	377.178,00 €
Secure-IC	FR	1.154.623,00 €	192.822,00 €	153.565,00 €
STMicroelectronics (Rousset) SAS	FR	3.106.389,00 €	518.767,00 €	257.830,00 €
STMicroelectronics srl	IT	3.019.200,00 €	504.206,00 €	854.794,00 €
Tecnologías Servicios Telemáticos y Sistemas S.A.	ES	535.500,00 €	89.429,00 €	225.750,00 €
THALES	FR	2.264.482,00 €	378.168,00 €	187.952,00 €
Universidad de Cantabria	ES	242.800,00 €	40.548,00 €	202.419,00 €
Università di Milano Bicocca	IT	378.000,00 €	63.126,00 €	126.000,00 €
Total		**21.661.806,00 €**	**3.617.522,00 €**	**5.048.449,00 €**