



## CARBON BASED SMART SYSTEM FOR WIRELESS APPLICATION



Start Date : 01/09/12  
Project n°318352

Duration : 36 months

Topic addressed : Very advanced nanoelectronic components: design, engineering, technology and manufacturability

### WORK PACKAGE 7 : Project management

#### DELIVERABLE D7.4


#### Minutes of the T0+12 meeting

Due date : T0+6

Submission date : T0+13

Lead contractor for this deliverable : TRT

Dissemination level : PU – Public

	<b>D7.4 : Minutes of the T0+12 meeting</b>	2/10
---	--	------

## WORK PACKAGE 7: Project management

### PARTNERS ORGANISATION APPROVAL

	Name	Function	Date	Signature
Prepared by:	S.Xavier	R&D Engineer	31/10/13	
Approved by:	Afshin Ziaei	Research Program Manager	31/10/13	

### DISTRIBUTION LIST

QUANTITY	ORGANIZATION		NAMES
1 ex	Thales Research and Technology	TRT	Afshin ZIAEI
1 ex	Chalmers University of Technology	CHALMERS	Johan LIU
1 ex	Foundation for Research & Technology - Hellas	FORTH	George KONSTANDINIS
1 ex	Laboratoire d'Architecture et d'Analyse des Systèmes	CNRS-LAAS	George DELIGEORGIS
1 ex	Université Pierre et Marie Curie	UPMC	Charlotte TRIPON-CANSELIET
1 ex	National Research and Development Institute for Microtechnologies	IMT	Mircea DRAGOMAN
1 ex	Graphene Industries	GI	Peter BLAKE
1 ex	Thales Systèmes Aéroportés	TSA	Yves MANCUSO
1 ex	SHT Smart High-Tech AB	SHT	Yifeng FU
1 ex	Universita politecnica delle Marche	UNIVPM	Luca PIERANTONI
1 ex	Linköping University	LiU	Rositsa YAKIMOVA
1 ex	Fundacio Privada Institute Catala de Nanotecnologia	ICN	Clivia SOTOMAYOR
1 ex	Tyndall-UCC	Tyndall	Mircea MODREANU

	<b>D7.4 : Minutes of the T0+12 meeting</b>	3/10
--	--	------

## CHANGE RECORD SHEET

REVISION LETTER	DATE	PAGE NUMBER	DESCRIPTION
Template	07/2013	8	
V1	31/10/2013	10	Final version

# CONTENTS

<b>1</b>	<b>PARTICIPANTS</b>	<b>5</b>
<b>2</b>	<b>AGENDA</b>	<b>6</b>
<b>3</b>	<b>INTRODUCTION AND PROJECT OVERVIEW (A. ZIAEI, TRT)</b>	<b>ERREUR ! SIGNET NON DEFINI.</b>
<b>4</b>	<b>WP PRESENTATIONS</b>	<b>ERREUR ! SIGNET NON DEFINI.</b>
4.1	WP 1 (A.ZIAEI, TRT)	<b>ERREUR ! SIGNET NON DEFINI.</b>
4.2	WP 2 (M.DRAGOMAN, IMT)	<b>ERREUR ! SIGNET NON DEFINI.</b>
4.3	WP 3 (G. KONSTANDINIS, FORTH)	<b>ERREUR ! SIGNET NON DEFINI.</b>
4.4	WP 6 (A. ZIAEI, TRT)	<b>ERREUR ! SIGNET NON DEFINI.</b>
4.5	WP 7 (A. ZIAEI, TRT)	<b>ERREUR ! SIGNET NON DEFINI.</b>
<b>5</b>	<b>REVIEW OF WORK &amp; ACTION LIST</b>	<b>ERREUR ! SIGNET NON DEFINI.</b>

## 1 PARTICIPANTS

**Date:** 13<sup>th</sup> September 2013

**Location:** Out of the Blue Capsis Elite Resort Hotel,  
Aghia Pelagia, Crete

**Contact:** Stephane Xavier  
Ph: +33 169 415 892/ Mob: +33 6 1923 8805  
stephane.xavier@thalesgroup.com

Afshin Ziaei  
Ph: +33 169 415 777 / Mob: +33 6 8924 8810  
afshin.ziaei@thalesgroup.com

Organisation		Person Names	Email Address
1	TRT	Afshin Ziaei	afshin.ziaei@thalesgroup.com
		Stéphane Xavier	stephane.xavier@thalesgroup.com
		Matthieu Lebaillif	Matthieu.lebaillif@thalesgroup.com
2	CHALMERS	Johan Liu	johan@sht-tek.com
		Kell Jeppson	jeppson@chalmers.se
3	FORTH	George Konstandinis	aek@physics.uoc.gr
		George Stavrinidis	gstav@ physics.uoc.gr
4	CNRS-LAAS	George Deligeorgis	gdeligeo@laas.fr
5	IMT	Alexandru Müller	alexandru.muller@imt.ro
		Mircea Dragoman	mircea.dragoman@imt.ro
6	SHT	Yifeng Fu	yifeng@sht-tek.com
7	GI	Peter Blake	peter@grapheneindustries.com
8	ICN	Juan Reparaz	sebas.reparaz@icn.cat
		Markus Wagner	<a href="mailto:markus.wagner@icn.cat">markus.wagner@icn.cat</a>
9	Tyndall	Mircea Modreanu	mircea.modreanu@tyndall.ie

	<b>D7.4 : Minutes of the T0+12 meeting</b>	6/10
---	--	------

## 2 AGENDA

Friday 13 September 2013		
09:00	Opening, Welcome and Agenda	
9:00 – 9:15	Introduction : general presentation and organisational aspects	TRT
9:15 – 11:00	<b>WP1/WP2 Presentations</b> <ul style="list-style-type: none"> <li>- Objectives &amp; means</li> <li>- Schedule of main milestones &amp; deliverables</li> <li>- Inputs / Outputs with other WPs</li> <li>- Over the project duration</li> <li>- Focus on the period T<sub>0</sub>+9 – T<sub>0</sub>+12</li> <li>- Check the deliverables for T<sub>0</sub>+12</li> </ul>	<b>WP leaders</b>
11:00 – 11:20	Coffee Break	
11:20 – 13:00	<b>WP3 Presentation</b> <ul style="list-style-type: none"> <li>- Objectives &amp; means</li> <li>- Schedule of main milestones &amp; deliverables</li> <li>- Inputs / Outputs with other WPs</li> <li>- Over the project duration</li> <li>- Focus on the period T<sub>0</sub>+9 – T<sub>0</sub>+12</li> <li>- Check the deliverables for T<sub>0</sub>+12</li> </ul>	<b>WP leaders</b>
13:00 – 14:30	Lunch	
14:30 – 14:45	<b>WP6/WP7 Presentations</b> <ul style="list-style-type: none"> <li>- Dissemination tools</li> <li>- Financial aspects</li> <li>- Publications and IPR</li> </ul>	TRT
14:45 – 16:00	<b>Technical discussion / Working group</b>	
16:00 – 16:20	Coffee Break	
16:20 – 17:00	<b>Detailed review of the deliverables for the period T<sub>0</sub>+12 – T<sub>0</sub>+18:</b> <ul style="list-style-type: none"> <li>- Working plan of the responsible partner</li> <li>- Who is involved? How? When?</li> <li>- Means &amp; Actions to achieve the deliverables on time</li> </ul>	<b>All</b>
17:00	<b>End of Meeting</b>	

All the presentations made during the Progrees Meeting will be available as soon as possible on the website. We report here only the contents of the discussions that occurred during the presentations.

### 3 INTRODUCTION AND PROJECT OVERVIEW (A. ZIAEI, TRT)

Thanks to FORTH to receiving us in Heraklion

The aims of the project are the RF active and passive fabrication devices with CNTs and Graphene.

Reminder of the WP responsible:

- WP1 : TAS (Y.Mancuso)
- WP2 : IMT (M.Dragoman)
- WP3 : FORTH (G.Konstandinis)
- WP4 : CNRS-LAAS (G.Deligeorgis)
- WP5 : ICN (C.Sotomayor)
- WP6 : TRT (A.Ziaei)
- WP7 : TRT(A.Ziaei)

Work planned for T0+12 :

Planning of the review for T0+12					
Del.	Deliverable name	WP	Delivery date	WP Leaders	Lead Beneficiary
D2.1	Report on design of the distributed amplifier based on CNT FET including the PA design and graphene based LNA , mixer and detector	2	T <sub>0</sub> +12	IMT	UNIVPM
D2.2	Report on design of the CNT based RF switch		T <sub>0</sub> +12	IMT	IMT
D2.3	Report on design of the CNT filter/oscillator		T <sub>0</sub> +12	IMT	LAAS
D2.4	Report on design of the CNT and graphene antenna		T <sub>0</sub> +12	IMT	TSA
D2.5	Report on design of graphene devices		T <sub>0</sub> +12	IMT	IMT
D3.1	Activity report on growth of carbon nanotubes and graphene	3	T <sub>0</sub> +12	FORTH	SHT
D3.2	Activity report on CNT and graphene material characterization		T <sub>0</sub> +12	FORTH	FORTH

There are 5 deliverables for WP2 and 2 deliverables for WP3

For the activity report we need from each partner one page to summarize your work for the last 6 month ==> **end of September**

For the management report, we need you cost ==> **end of September**

For the e-newsletter, each partner must send few line to TRT to summarize his work (highlights for the first year of the project) ==> **end of September**

Next meeting:

- First review meeting will take place in **Brussel (Belgium), on the 12<sup>nd</sup> of November (9am-5pm)**. There is a preparation meeting November 11

- Next progress meeting (T0+15) will take place in **Barcelona (Spain), on the 24<sup>th</sup> of January (9am-6pm)**.

The reviewer for the project are :

- Project Officer (EC) : Isabel VERGARA-OGANDO
- Siebe Bouwstra (MEMS TC) & Dr Pirjo Pasanen (Spinverse Oy Ltd)

## 4 WP PRESENTATIONS

### 4.1 WP 1 (A.ZIAEI, TRT)

### 4.2 WP 2 (M.DRAGOMAN, IMT)

All the deliverables are for T0+12 :

Deliverable	Deliverable Title	Lead Beneficiary	Partners involved
D2.1	Report on design of the distributed amplifier based on CNT FET including the PA design and graphene based LNA , mixer and detector	UNIVPM	TRT, IMT, TAS
D2.2	Report on design of the CNT based RF switch	IMT	TRT, IMT, CNRS-LAAS, ICN
D2.3	Report on design of the CNT filter/oscillator	CNRS-LAAS	TRT, IMT
D2.4	Report on design of the CNT and graphene antenna	TAS	IMT, TRT, CNRS-LAAS, UPMC
D2.5	Report on design of graphene devices	IMT	IMT, UNIVPM, CNRS-LAAS

Status of the different deliverables:

- D2.1 : Luca (UNIVPM) work on it and will be completed on time
- D2.2 : OK
- D2.3: simulations are completed and must write the deliverable
- D2.4 : Charlotte (UPMC) work on it with Luca (UNIVPM)
- D2.5 : OK

Mircea showed the presentation of Charlotte concerning CNTs antennas.

### 4.3 WP 3 (G. KONSTANDINIS, FORTH)



Tasks	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	3.10
TRT		X	X	X	X	X	X			X
CHALMERS	X						X			
FORTH		X	X					X	X	X
LAAS		X	X			X	X	X	X	X
UPMC		X								
IMT		X						X	X	
GI	X							X		
TAS										
SHT	X	X	X	X	X	X			X	
UNIVPM										
LIU	X							X	X	
ICN		X		X			X	X		
TYNDALL			X	X		X		X		X

Chalmers show the results concerning the CNTs interconnect. There is a process development for the CNTs transfer on the TSV for 3D integration. It is also possible to densified the CNTs.

Future plan

- ▶ Fabrication of CNT filled TSV chips
- ▶ Stacking of CNT filled TSV chips

FORTH show the last result concerning the graphene FET fabrication. Some results are obtained concerning the ohmic contacts quality. Better result is obtained with Pd.

LAAS showed the 1<sup>st</sup> fabrication of the hall device. We obtained a mobility of 200cm<sup>2</sup>/Vs. New process flow are defined to work on power loss substrate (Polyimide membrane). It should discuss interest in working with this kind of substrate (compatible with our applications?)

Peter Blake (Graphene industries) shows the last result concerning the graphene transfer. 11 samples produced using high resistivity silicon provided by IMT. Graphene on hBN sample available for Nano-RF.

ICN studies the high-k dielectrics provided by Tyndall

#### 4.4 WP 6 (A. ZIAEI, TRT)

Publications can be uploaded and the bibliographic details entered.

All partners need to send few lines to summarize the work for the newsletters

	<h2 style="text-align: center;">D7.4 : Minutes of the T0+12 meeting</h2>	<p style="text-align: right;">10/10</p>
---	--	---

### 4.5 WP 7 (A. ZIAEI, TRT)

For the activity report we need from each partner one page to summarize your work for the last 6 month ==> **end of September**

For the management report, we need you cost ==> **end of September**

## 5 REVIEW OF WORK & ACTION LIST

Description	Date	Leader
One page for the activity report	End of September	TRT
Cost for the management report	End of September	TRT
Few lines for the e-newsletter	End of September	TRT
D2.1, D2.2, D2.3, D2.4, D2.5	End of September	IMT
D3.1, D3.2	End of September	FORTH
D7.10,D7.16	End of September	TRT
D6.2	End of September	TRT
Review meeting: Brussels,12nd November	November 2013	ALL
Next meeting: ICN, Barcelona 31 January and 1 <sup>st</sup> February 2013	January 2014	ALL