

Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire

Universität St-Gallen Weiterbildungszentrum

**European Research Infrastructures** 

14.June.2010 – 15.June.2010 Olaf Jedicke Karlsruhe Institut für Technologie (KIT) Germany













micro-nano fabrication of functional structures and devices

out of a knowledge-based multimaterials' repertoire







#### **Some Basics on Capacities**

- EUMINA fab
  - Integrating European research infrastructures for micro-nano fabrication of functional structures and devic out of a knowledge-based multimaterials' repertoire

- Budget within FP7: 4 076 mio €
- 7 broad areas
  - Research Infrastructures
  - Research for the benefits of the SME
  - Research of knowledge
  - Research potential of Convergence Regions
  - Science in society
  - Support to the coherent development of research policies
  - International cooperation



#### **Some Basics on Capacities**

- EUMINAfab
  - Integrating European research infrastructures for micro-nano fabrication of functional structures and device

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#### Basics on EUMINA fab



Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire

#### SEVENTH FRAMEWORK PROGRAMME FP7-INFRASTRUCTURES-2008-1

Integrating Activity

Grant agreement for: Coordination and Support Actions for Integrating Activities

Grant agreement no.: FP7-226460









#### **EUMINA** fab Project (success story?)



Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire

#### **EUMINA** fab the proposal

# **EUMINA** fab the project



### **EUMINA** fab Project (success story?)



Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire

**EUMINA** fab the proposal

**EUMINA** fab the project



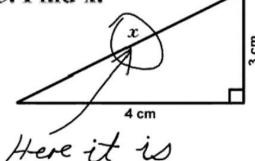
#### **EUMINA** fab Project (success story?)



Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire

How does an infrastructure projects will come to life?

3. Find x.





#### **EUMINA** fab Project (basic history)



Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire

#### basics history

- having a basic idea (impact for Europe? advantages? generating knowledge? Etc.)
- check who is already active in this field (do you have really a new idea?)
- wind up the idea in an useful discussion paper (instrument for communication)
- discussing these abstract with different colleagues (evolution of the idea)
- formulation of the main aim (what will be the final aim and who will need this)
- getting familiar with the possibilities and needed resources (set up of requirements)
- set up of a draft work plan (aims, tasks, milestones, deliverables...)
- set up of a consortium (...

- ...

at this stage you are already in set up a proposal...

... but already more than one year has passed by!





#### **EUMINA** fab Project (basic)



Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire

Perceive the demand of external institutions, to use your technical infrastructure

#### **EUMINA** *fab* the <u>proposal</u>

To strengthen European science and economy by offering scientific possibilities (not only technical facilities) in supporting European Community, scientists, industry while generating knowledge by testing external "ideas" in a broad specific area through:

- offering scientific expertise (knowledge)

- offering special technologies (experiments)

- offering networking (connections)



#### **EUMINA** fab Project (basic)



Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire

Perceive the demand of external institutions, to use your technical infrastructure

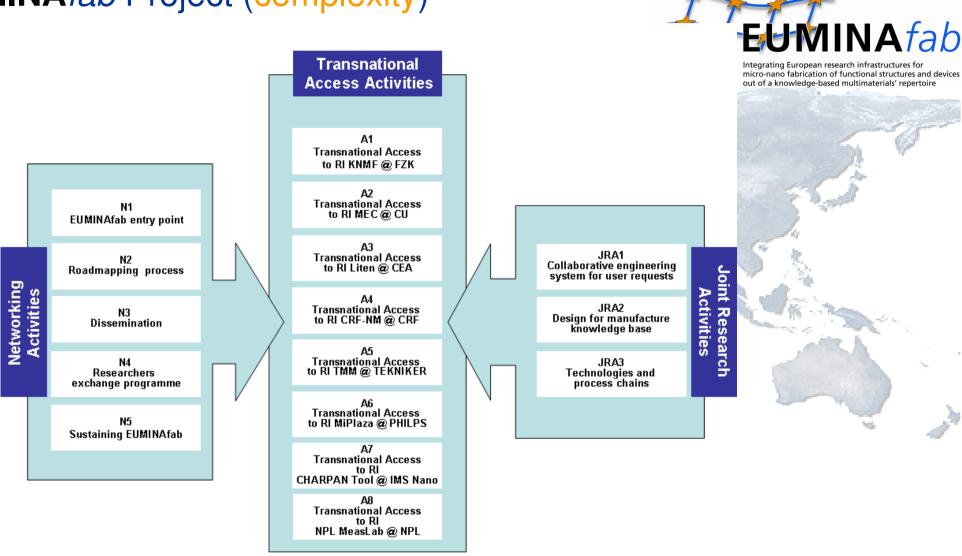
#### **EUMINA** fab the proposal

- offering scientific expertise
- offering special technologies
- offering networking

(knowledge) Joint Research Activities (experiments) Transnational Access Activities (connections) Network Activities

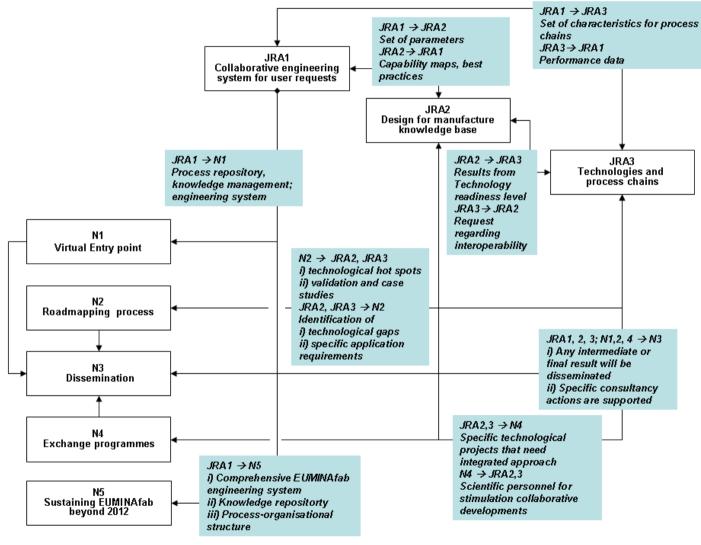


#### **EUMINA** fab Project (complexity)





### **EUMINA** fab Project (interaction)







#### **EUMINA** fab tool box (idea)



Ambient Assisted Living

Medical Diagnosis & personal health

Consumer applications & electronic devices

Intelligent textiles & clothes

**Energy conversion &** storage

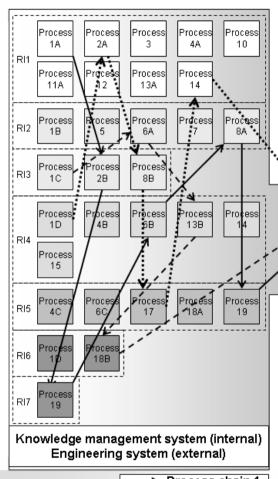
**Transport & mobility** 

Information & communication technology

Safety & defence

- Rapid prototype
- Integrated microoptical system
- Nanostructured microfluidics
- Wear resistant surfaces
- High parallel 3D nanostructures
- Large format microcomponent
- Ultra precision metal part
- Soft magnetic nano structure
- Disposable micro part

• ...



micro-nano fabrication of functional structures and devices Nano motor out of a knowledge-based multimaterials' repertoire

**Ceramic micropump** 

**Extracorporal** artifical organ

Cell screening system

> **Energy** harvesting systems

conductive polymers Multifunctional

Devices from

integrated sensor system

Integrated displays

...

Typical application areas

Typical requests

**EUMINAfab** ,tool box'

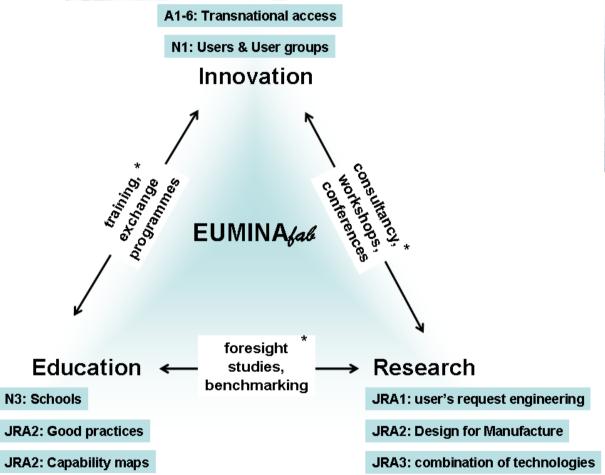
Process chain 1 --> Process chain 2 ·····> Process chain ...

Exemplary

expected results



#### **EUMINA** fab tool box (impact)



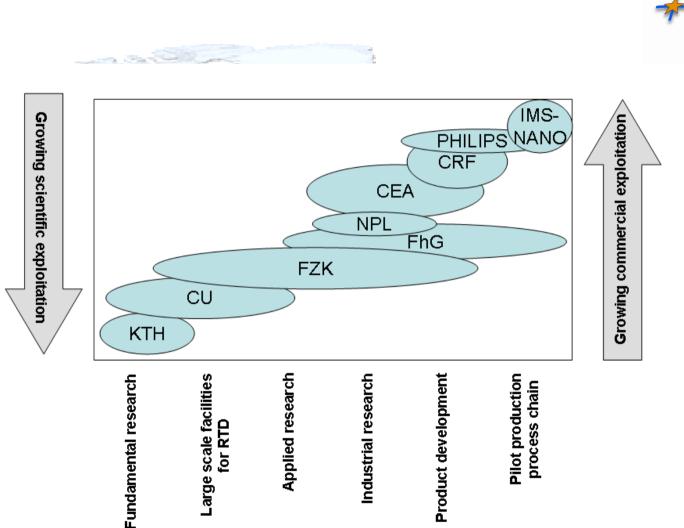








#### **EUMINA** fab Project (consortium)









#### **EUMINA** fab Project (consortium)































#### **EUMINA** fab Project (beneficiaries)



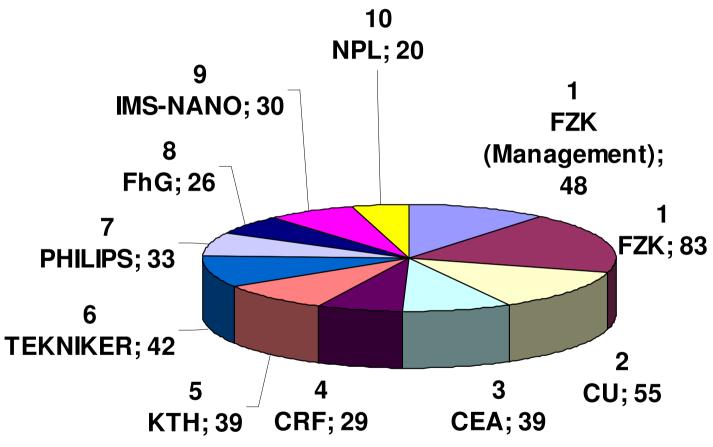
Beneficiary Number *	Beneficiary name	Beneficiary short name	Country	Date enter project**	Date exit project**
1(coordinator)	Karlsruher Institut für Technologie	KIT	Germany	M1	M48
2	Cardiff University	CU	United Kingdom	M1	M48
3 *	Commissariat à l'Energie Atomique	CEA	France	M1	M48
4	Centro Ricerche FIAT S.C.p.A.	CRF	Italy	M1	M48
5	Kungliga Tekniska Högskolan	KTH	Sweden	M1	M48
6	Fundación TEKNIKER	TEKNIKER	Spain	M1	M48
7	Philips Research Europe	PHILIPS	The Netherlands	M1	M48
8	Fraunhofer Gesellschaft	FhG	Germany	M1	M48
9	IMS Nanofabrication AG	IMS-NANO	Austria	M1	M48
10	NPL Management Limited	NPL	United Kingdom	M1	M48



#### **EUMINA** fab Project (resources committed)



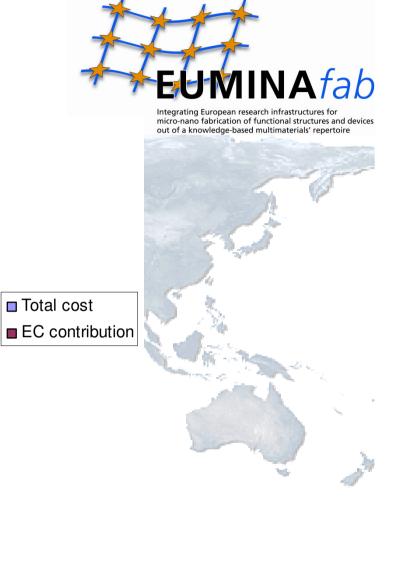


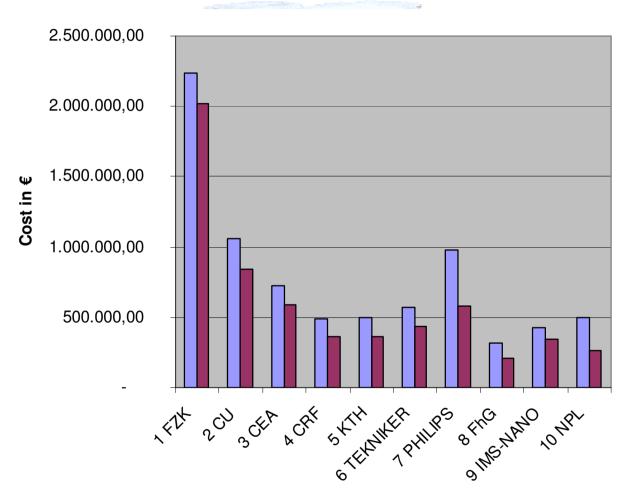






#### **EUMINA** fab Project (budget distribution)



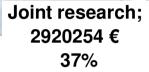




#### **EUMINA** fab Project (budget per activities)

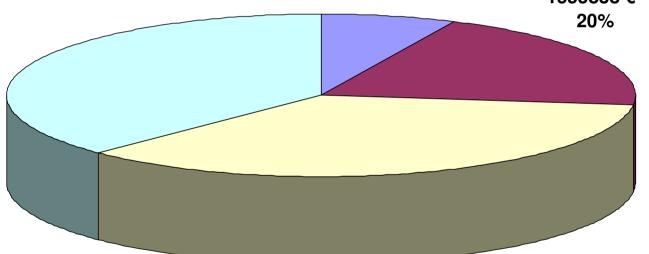


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Networking; 1555838 €

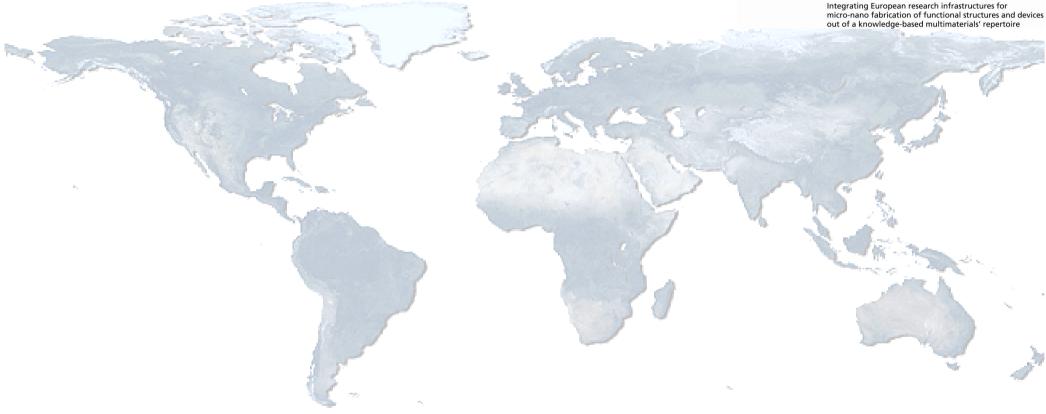


Transnational access; 2777038 € 36%



### **EUMINA** fab Project (scientific content)







#### **EUMINA** fab Project (work packages)



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		Work package/task title	1	2 3	4	5 6	7	8 9	10 11	12	13 14	15 16	17 1	8 19 2	20 21	22 23	24 2	5 26 2	27 28	29 3	0 31 3	32 33	34 35	36 3	37 38	39 40	41 42	43 44	45 46 47	48
WP1	WP1	Management of the EUMINAfab consortium																												Ī
	WP1.1	Financial, legal and administrative project management																												
	WP1.2	Internal communication standards and continuous project monitoring								$\Box$			Ħ	$\top$	$\top$			$\top$						T						
	WP1.3	Collecting of best practices in a EUMINAfab project handbook																												
	WP1.4	Progress reporting and a final report						1						$\top$	$\Box$			$\top$								П				
	WP1.5	Preparation of detailed implementation plans																												٦
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WP2	N1	Entry point to EUMINAfab																												
	N1.1	Operating the knowledge management system and the EUMINAfab portal																												
	N1.2	Enhancing the outreach of new users																												٦
	N1.3	EUMINAfab access services																												
	N1.4	EUMINAfab review procedure																												
WP3	N2	Roadmapping process																												
	N2.1	Data mining on multimaterial micro and nano technologies								Ш				Ш				Ш		Ш				Ш						
	N2.2	Expert interviews								Ш				Ш										ш						
	N2.3	Foresight approach and case studies																										'		
WP4	N3	Dissemination																												
	N3.1	Training and schools								Ш				$\perp \perp$	Ш			$\perp$						$\perp \perp$						
	N3.2	Regional consultancy								ш				$\perp \perp$										$\perp \perp$						
	N3.3	Workshops and conferences	$\perp$																					-						
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WP5	N4	Researchers Exchange Programme								_					_				_											
	N4.1	Definition and constitution of the Researcher Exchange Programme												$\perp$																_
	N4.2	Promotion of Researcher Exchange Programme	$\dashv$			_	++	+	_	++	+		$\vdash$	++	+	_	$\vdash$	+	4	$\vdash$	+	_		₩	+					
	N4.3 N4.4	Development of activities during the exchange	-			_	++	+		++	+	$\vdash$	$\vdash$	++	+	_	$\vdash$	+	+	$\vdash$	++			++	+	-			-	
	N4.4	Reporting and information database	-	_		_	++				_			++				-	_		++			-						_
WP6	N5	Sustaining EUMINAfab	_	_	┢	+	╁┼	+	_	╁┼	-	$\vdash$	┝	+	+	_	H			$\bot\bot$								_		
WFO	N5.1	Organisational structure		_	+	+	++	+	+	+	+	++	$\vdash$	+	+	+		_	_						_			_		
	N5.1	Business strategy and plan	-			_	++	+		++	+	<del>     </del>	$\vdash$	++	+	+				$\vdash$	++			++	+				+	
	N5.3	Preparatory work towards an implementation of the integr. business plan	-			-		+	-	++	+		$\vdash$	+	+	-	H	+	+					++	+				-	
	145.5	reparatory work towards an implementation of the integr. business plan	+			_	$\vdash$	+	_	+	+	$\vdash$	H	+	$\pm$	-	$\vdash$	+	+		+			+++						_
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44 F 7	A1	Transmational access to the Nation at 1 ZIX		+		T			<del></del>							7		1	Ŧ					1 1				Ŧ		-
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WP9	A3	Transnational access to RI LTF at CEA	$\blacksquare$																											
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WP10	A4	Transnational access to RI CRF-MN at CRF		-						_			_																	
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WP11	A5	Transnational access to RI TMM at TEKNIKER		_																										



### **EUMINA** fab Project (work packages)



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WP12	A6	Transnational access to RI MiPlaza at PHILIPS																															
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WP13	A7	Transnational access to RI IMS-CHARPAN at IMS-NANO																															
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WP14	A8	Transnational access to RI NPL-MeasLab at NPL																															
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WP15	JRA1	Collaborative engineering system for user requests																															
	JRA 1.1	Development of EUMINAfab Standard Operation Procedures (SOP)																															
	JRA 1.2	Software tools supporting EUMINAfab's information and comm. mgt.																															
	JRA 1.3	Integrating software architecture and webportal for users	Ш																														
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WP16	JRA2	Design for manufacture knowledge																												丄	Ш	Ш	
	JRA 2.1	Technology capability maps	Ш											ш				Ш								ш	丄	ш	Ш	丄	ш	ш	ш
	JRA 2.2	Traceability and hardware compatibility			Ш																				4	ш				Ш.	ш	ш	ш
	JRA 2.3	Design maturity assessment and technology readiness levelling	$oldsymbol{\sqcup}$											ш				Ш							ட	ш	丄	ш	Ш	丄	ш	ш	
	JRA 2.4	Technology selection and process planning	ш																						ㅗ	ш		ш	Щ	丄	ш	Ш	
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WP17	JRA3	Technologies and process chains	44																									_				_	
	JRA 3.1	Horizontal integration of EUMINfab installations	ш									$\perp$		ш		ш		Ш		ш		ш	_	$\perp$	$\perp$	44		$\bot\bot$	Ш		$\sqcup$	ш	$\bot$
	JRA 3.2	Vertical integration of EUMINfab installations	ш				Ш					$\perp$		ш		ш		Ш		ш		ш	_	$\perp$	$\perp$	ш	4	ш	ш		$\sqcup$	ш	$\perp$
	JRA 3.3	Technology demonstrators	ш																											$oldsymbol{\perp}$			
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WP18	GEAA	Gender equality and awareness activities in EUMINAfab	4			_											1	1 1			-				_				4		_		
	GEAA.1	Establishing a EUMINAfab gender equality agent	$\blacksquare$			4						$\perp$			_	$\vdash$	_	$\sqcup$	4	++	_	44	_	$\bot$	$\vdash$	$\dashv$	$-\!\!\!\!\!+$	+	+	+	$\vdash$	$\dashv$	$+\!\!\!\!+$
	GEAA.2	Evaluate the situation of female scientists in EUMINAfab	$\dashv$	4	$\vdash$	4	Щ	+				$\perp$	_	$\Box$		$\sqcup$		Ш		$\sqcup$			_		$oldsymbol{+}$	$\bot$	_	$\bot$	$\perp$		$oldsymbol{\sqcup}$	$oldsymbol{\perp}$	$\perp$
	GEAA.3	Gender activity network	$\dashv$	_	$\vdash$	4	$\vdash$	+	-	$\perp$		$\perp$		ш		$\bot$		Ш	4	$\vdash$		+	4		-	44	4	44		-	+		$\perp$
	GEAA.4	Female researcher exchange activity	$\dashv$	_	$\bot$	+	$\vdash$	+		$\perp$		+		ш		$\vdash$		Ш		+		++		$\blacksquare$	$\rightarrow$	$\blacksquare$	4	44		_	$\vdash$	4	
	GEAA.5	Network of female scientists	+	_	$\vdash$	+	$\vdash \vdash$	+				+		+		$\blacksquare$		Ш					4		4	4		4			+		
	GEAA.6	Annual evaluations of gender actions	ᆚ									Ш				Ш									ᄔ	للل		44	لــلــ		ш	Ш	



### **EUMINA** fab Project (milestones)



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1.1	list of evaluation experts						N																1																					
1.2	1st call (unspecific) of EUMINAfab						N	2																																	Т		Т	
1.3	information management tool								JR	41													7																					
1.4	impact of exchange programme									N4																																		
	launch of information management																						-1																					
1.5	system										1												4																			_	$\perp$	$\perp$
1.6	2 <sup>nd</sup> call (unspecific) of EUMINAfab											N	12																															
1.7	agreement road mapping activities																Į.	N2					4																			$\perp$	$\perp$	$\perp$
	3 <sup>rd</sup> call (specific or unspecific) of																						- 1																					
1.8	EUMINAfab																	N2																										
1.9	knowledge database																	JRA	1																									
	demonstrators for reference process																						- 1																					
	chains and services offered by																						- 1																					
1.10	EUMINAfab							_			_	_		_				_		JF	RA3		f	first	pro	ject	rev	/iew	ı (Ka	ırlsı	ruhe	)	sec	one	l pr	oje	ct re	evie	w (	Bru	ssel	s)	$\perp$	_
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	methodology for assessing the TRL of																						-																					
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4.40	evaluation of performance of exchange																							Ι.																				
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4 45	end of business exploitation plan set-																						- 1						Π,	15														
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# **EUMINA** fab Project (deliverables)



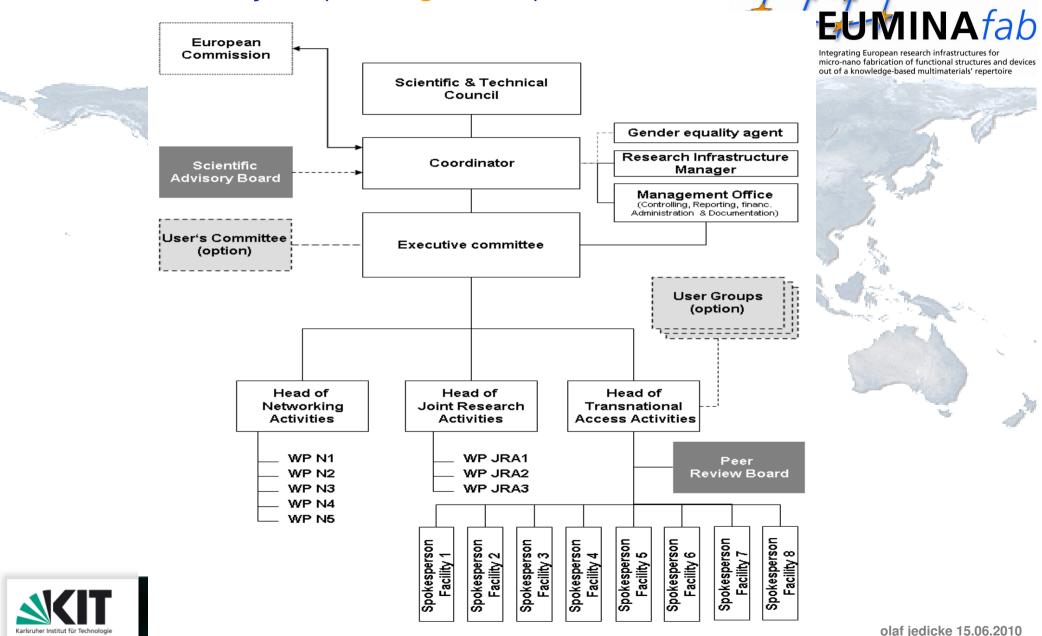
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01.1	1st periodic report	-							_	_	_	-		R re	eport			_	-		_	_	_		_	_	_	_			+	_	-	+	+	$\perp$	+	-		_	+	_	
01.2	2nd periodic report	-							_	_	+	-		_				_	_		_	_	_		_	_	$\perp$	R	repo	ort	+	+	+	+	+	+	+	-		_	+	_	
01.3	3rd periodic report (final)	-						_		_	+	-		_				_	-		_	_	-		_	_	$\perp$	-		_	+	+	+	+	+	+	+	-		_	+	+	R
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01.8	update standard handbook								_	_			Ш.								_		pdat				_			_	_	_	_	_	_	_		_			_	_	
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# **EUMINA** fab Project (deliverables)



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	operational handbook according user																																				
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DJRA1.4	knowledge																												C	da	taba	ase					
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DJRA1.6	EUMINAfab middleware																										R re	port									
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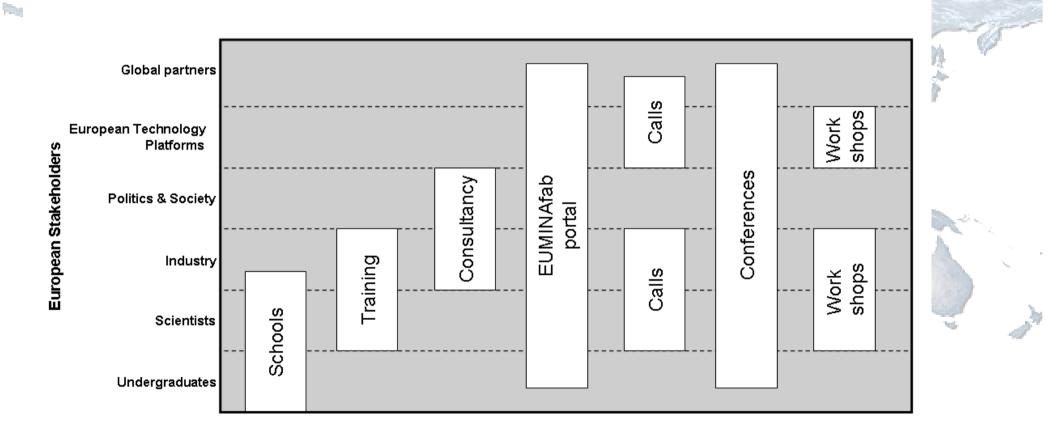
#### **EUMINA** fab Project (management)



#### **EUMINA** *fab* Project (dissemination)



out of a knowledge-based multimaterials' repertoire



**EUMINAfab Dissemination Instruments** 



Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledgebased multimaterials' repertoire



#### PROJECT INFORMATION

- · Welcome to EUMINAfab
- Mission
- Partnership
- News
- · Gender Equality

#### **SERVICES**

Technologies

#### **USER ACCESS**

- · Proposal submission
- · Conditions of access
- · Technology experts
- User Office
- Downloads
- EC Member & Associated States
- Meet EUMINAfab
- FAQ

#### **TRAINING & SCHOOLS**

Winter School - Nanocharacterization

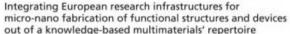
Techniques and Tools

#### MEMBER'S AREA

- User Area
- · EUMINAfab Intranet

# First Call Open





#### SEVENTH FRAMEWORK PROGRAMME FP7-INFRASTRUCTURES-2008-1

Integrating Activity

Grant agreement for: Coordination and Support Actions for Integrating Activities

Grant agreement no.: FP7-226460





#### **EUMINA** fab Project (tips for success story)



Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire

- Don't set up and write the proposal alone! Create a group 4-6 persons
- Don't dedicate work, dedicate responsibilities!
- Define more than one person as internal Coordinator!
- Implement Collogues which are familiar with European Framework Program
- Respect the requests of the Commission! Guidelines
- Be exact and perfect in the wording and language (easy language)
- Talk about the future not about the past!
- Set high demands on yourself and your proposal!

- ...

- ...



#### Further Information on EUMINA fab



micro-nano fabrication of functional structures and devices







Integrating European research infrastructures for micro-nano fabrication of functional structures and devices out of a knowledge-based multimaterials' repertoire



