Project no: 043268

Project acronym: PATRES

PATTERN RESILIENCE

Instrument: STREP

Thematic Priority: New and Emerging Science and Technology

Periodic management report

Period covered: from 01/08/2008 to 31/01/2010 Date of preparation: 15/03/2010

Start date of project: 01/02/2007 Duration: 36 months

Project coordinator: Guillaume DEFFUANT
Project coordinator organisation: Cemagref Revision: Version 2

Content

Section 1 - Justification of major cost items and resources

Brief description of work of each partner in each workpackage.

Partner 1: Cemagref

Workpackage 1 (Case studies)

- Development of the second version of the bacteria model, including bacteria motility and further study of the pattern dynamics (identification of regular and labyrinth patterns).
- Approximation of a pattern dynamics from the bacteria second version model, using moment approximation.
- Computation of the viability and resilience based on this model, through a function approximation.
- Collaboration with UIB, CNRS and UFZ for the computation of viability kernel and resilience indices on their case studies.

Workpackage 2 (Pattern dynamics)

- Improvement of SimExplorer: improvement of the user interface, inclusion of new experimental designs, improvement of the functionalities to launch simulations on a computer grid.

Workpackage 3 (Resilience)

- Development of an improved version of KAVIAR: inclusion of several optimisation methods for computing the action (conjugate gradient, Newton method).
- Development of new methods for robust control taking the distance to the boundary of the viability kernel into account.

Workpackage 4 (Dissemination)

- Dissemination of results on publications and conference presentations.
- Participation to workshop about the project results in ECSS (Warwick, September 2009).
- Participation to the course about the project methods in Madeira (October 2009).
- Collaboration with UniS on the coordination and edition of the book.

Workpackage 5 (Management)

- Co-organisation of the ECSS workshop.
- Preparation and animation of management meetings.
- Coordination of the final report.

Partner 2: University of Surrey (UniS)

Workpackage 1 (Case studies)

- Data collection and analysis about Web 2.0 (Flickr, wikisphere, and open source development communities)
- Development of pilot dynamical models (collaboration with UIB).

Workpackage 2 (Pattern dynamics)

- Study of statistical patterns in the data from Flicker and wikisphere

Workpackage 3 (Resilience and viability)
No methodological input from UniS.

Workpackage 4 (Dissemination)
- The project website has been running since the start of the project and is gradually expanding to cover the results of our work.
- Organisation of Warwick dissemination workshop (September 24, 2009).
- Organisation of tutorial course in Madeira (October 21-23, 2009).

Workpackage 5 (Management)
- Participation in management meetings and other communications and visits with partners.

Partner 3: Universitat Illes Balear UIB

Workpackage 1 (case studies)
- Study of the effects of social network communities on the dynamics of language competition
- Characterization of the role of prestige and volatility in language dynamics through simulations of the IBMs of language competition
- Derivation and analysis of macroscopic descriptions of language dynamics models in different complex networks.
- Study of the effects of tree-tree establishment competition and fire on savanna dynamics (collaboration with UZF).
- Study of tree-grass coexistence: the "savanna problem"(collaboration with UZF).
- Study of Group formation and homophily in the Flickr online community (collaboration with UniS)
- Micro-macro connection in the description of formation of bacterial and polymeric patterns in microbial films (collaboration with LISC-Cemagref)

Workpackage 2 (Pattern Dynamics)
Further progress in relating the microscopic dynamics and the macroscopic behaviour of individual based models along several lines:
- From microscopic to macroscopic dynamics for systems with two symmetric absorbing states,
- Competitive interactions,
- Master equation description of noisy dynamics.

Each of these lines led to publications.

Workpackage 3 (Resilience)
- Collaboration with LISC-Cemagref in a final calculation of viability and resilience of the language competition case study

Workpackage 4 (Dissemination)
- Participation in the workshop on Pattern Resilience at ECCS 2009, September 24, 2009,

University of Warwick
- Participation in the tutorial workshop on Simplifying individual-based models and computing viable or resilient action policies, MADEIRA 21-23 October 2009
- Contribution to PATRES book on the language competition case study

Workpackage 5 (Management)
- Participation in management meetings and other communications and visits with partners.

Partner 4: UFZ Centre for Environmental Research

Workpackage 1 (Case studies)
- Coordination of the work on case studies.
- Development of a second version of the savanna model, with parameters derived from the Jeltsch model. Definition of a new function representing fire, fitting better the data from the Jeltsch model.
- Development of fire model in savannas.
- Approximation of a pattern dynamics from the savanna model (collaboration with UIB),
- Computation of the viability and resilience based on this model (collaboration with Cemagref).

Workpackage 2 (Pattern dynamics)
- Detection of patterns with the new savanna model where the pair approximation model is more appropriate.

Workpackage 3 (Resilience)
- Literature review about resilience (see chapter 2 of the book), and contribution to the connection between viability-based resilience and different views of resilience in ecology (chapter 3).

Workpackage 4 (Dissemination)
- Participation in the workshop on Pattern Resilience at ECCS 2009, September 24, 2009, University of Warwick
- Participation in the tutorial workshop on Simplifying individual-based models and computing viable or resilient action policies, MADEIRA 21-23 October 2009
- Paper publications
- Contribution to PATRES book on the resilience chapters and on the savanna case study chapter.

Workpackage 5 (Management)
- Participation in management meetings and communication with other partners.
- Organisation of plenary meeting in Bad-Schandau 13-15 October 2008.

Partner 5: Centre National de la Recherche Scientifique

Workpackage 1 (Case studies)
- Exploration of scientific field pattern dynamics.

- Development of the case study about social dilemma (collaboration with Cemagref)

Workpackage 2 (Pattern dynamics)

- Settlement of the PC cluster to be used for intensive computation experiments to identify patterns.
- Collaboration with Cemagref for the development of grid and cluster use facilities in SimExplorer.

Workpackage 3 (Resilience)

- Use of KAVIAR in the social dilemma case study.

Workpackage 4 (Dissemination)

- Paper publications and participation to conferences.
- Participation in the tutorial workshop on Simplifying individual-based models and computing viable or resilient action policies, MADEIRA 21-23 October 2009
- Contribution to PATRES book on the resilience chapters and on the prisoner's dilemma case study chapter.

Workpackage 5 (Management)

- Participation in management meetings and communication with other partners.
- Organisation of plenary meeting 5 in Paris (25-27 March 2009)

Comments on labour effort and expenses compared with plan

Tables 1 and 2 give the figures of actual budget spent and actual man.months of activity of the project, compared with their initial budget.
Globally, in the period, we consumed 60% of the planned man.months and 63% of the planned budget. The global effort has been higher in the second period than in the first one (54% for man.months and 55% for the costs).
A closer look at the activity of each partner suggests the following comments:

- Cemagref continued a strong investment in the project with 101% of the total man.months in the period, and 83% of the total costs. Moreover, some of the activity on the project has been financed from other means (especially on WP1), and does not appear in the tables.
- CNRS man.month expense is lower than planned in the period (38% of the total planned), and the global expense as well (26% of the total planned). The main reason is a lower investment of CNRS in WP3, because of the departure of the main scientist in charge of this part. Cemagref compensated this defection.
- UniS man.months are higher than the plan for the period (99%), but for a lower budget (86%). This is probably due to the devaluation of the British Pound during the period.

Person-Month Status Table							
CONTRACT Nº:	**43268**	**TOTALS**	1. Cemagref	2. UniS	3. UIB	4. UFZ	5. CNRS
ACRONYM:	**PATRES**						
PERIOD: from 1/08/08 to 31/01/10							
(man.months with eligible costs)							
Workpackage 1:	**Actual WP total:**	**40,26**	1,3	12	12	10,96	4
Case studies	**Planned WP total:**	**67,8**	9	12	16	20,8	10
Workpackage 2:	**Actual WP total:**	**65,7**	31,2	2	12	9	11,5
Pattern dynamics	**Planned WP total:**	**65**	13	5	20	13	14
Workpackage 3:	**Actual WP total:**	**42,4**	8,4	2	7	10	15
Resilience	**Planned WP total:**	**97**	15	5	13	11	53
Workpackage 4:	**Actual WP total:**	**17**	4,5	7	3,5	1	1
Dissemination	**Planned WP total:**	**32**	5	14	4	3	6
Workpackage 5:	**Actual WP total:**	**1,6**	1,1	0	0,5	0	0
Management	**Planned WP total:**	**6**	4	0	1	0	1
	Actual total:	**166,96**	**46,5**	**23**	**35**	**30,96**	**31,5**
Total Project Person-month	**Planned total:**	**267,8**	**46**	**36**	**54**	**47,8**	**84**

Table 1: Person-Month Status (the planned figures are for the whole project, the actual figures are for the period: from 1/08/08 to 31/01/10).

Contract Nº:	43268	Acronym: PATRES				Date : 15/03/2010			
PARTI-CIPANTS	TYPE of EXPENDITURE	BUDGET	ACTUAL COSTS (EUR)			Pct. spent			Remaining Budget (EUR)
			Period 1	Period 2	Total	Period 1	Period 2	Total	
		e	a1	b1	e1	a1/e	b1/e	a1+b1/e	e-e1
1-Cemagref	**Total Person-month**	**46,0**	53,0	46,5	**99,5**	115%	101%	216%	**-53,5**
	Personnel costs	**444 250,0**	345 081,6	368 766,8	**713 848,4**	78%	83%	161%	**-269 598,4**
	Equipment				**0,0**	0%	0%	0%	**0,0**
	Travel	**30 000,0**			**0,0**	0%	0%	0%	**30 000,0**
	Other costs				**0,0**	0%	0%	0%	**0,0**
	Total Costs	**474 250,0**	**345 081,6**	**368 766,8**	**713 848,4**	**73%**	**78%**	**151%**	**-239 598,4**
2-UniS	**Total Person-month**	**36,0**	18,0	23,0	**41,0**	50%	64%	114%	**-5,0**
	Personnel costs	**173 736,0**	65 265,9	84 456,2	**149 722,1**	38%	49%	86%	**24 013,9**
	Equipment				**0,0**	0%	0%	0%	**0,0**
	Travel	**31 500,0**	10 262,1	20 859,8	**31 121,8**	33%	66%	99%	**378,2**
	Other costs	**45 047,2**	17 238,0	24 263,7	**41 501,7**	38%	54%	92%	**3 545,5**
	Total Costs	**250 283,2**	**92 765,9**	**129 579,7**	**222 345,6**	**37%**	**52%**	**89%**	**27 937,6**
3-UIB	**Total Person-month**	**54,0**	28,3	35,0	**63,3**	52%	65%	117%	**-9,3**
	Personnel costs	**408 100,0**	231 593,7	232 607,4	**464 201,1**	57%	57%	114%	**-56 101,1**
	Equipment	**10 000,0**	1 521,9	2 899,7	**4 421,6**	15%	29%	44%	**5 578,4**
	Travel	**30 000,0**	9 580,9	18 690,4	**28 271,3**	32%	62%	94%	**1 728,7**
	Other costs	**7 120,0**	2 853,9	5 731,4	**8 585,3**	40%	80%	121%	**-1 465,3**
	Total Costs	**455 220,0**	**245 550,4**	**259 928,8**	**505 479,2**	**54%**	**57%**	**111%**	**-50 259,2**
4-UFZ	**Total Person-month**	**47,8**	19,8	31,0	**50,8**	41%	65%	106%	**-3,0**
	Personnel costs	**437 010,0**	161 494,5	273 320,1	**434 814,6**	37%	63%	99%	**2 195,4**
	Equipment				**0,0**	0%	0%	0%	**0,0**
	Travel	**17 500,0**	6 064,1	11 123,3	**17 187,4**	35%	64%	98%	**312,6**
	Other costs	**9 500,0**	7 404,0	1 209,8	**8 613,8**	78%	13%	91%	**886,2**
	Total Costs	**464 010,0**	**174 962,6**	**285 653,2**	**460 615,8**	**38%**	**62%**	**99%**	**3 394,2**
5-CNRS	**Total Person-month**	**84,0**	26,0	31,5	**57,5**	31%	38%	68%	**26,5**
	Personnel costs	**305 592,0**	174 932,3	87 595,6	**262 527,9**	57%	29%	86%	**43 064,1**
	Equipment	**100 000,0**	86 064,7	7 977,5	**94 042,2**	86%	8%	94%	**5 957,8**
	Travel	**16 000,0**	5 291,9	14 907,9	**20 199,8**	33%	93%	126%	**-4 199,8**
	Other costs	**23 170,0**	18 271,3	3 573,1	**21 844,4**	79%	15%	94%	**1 325,6**
	Total Costs	**444 762,0**	**284 560,2**	**114 054,1**	**398 614,3**	**64%**	**26%**	**90%**	**46 147,7**
TOTAL	**Total Person-month**	**267,8**	**145,1**	167,0	**312,1**	54%	62%	117%	**-44,3**
	Personnel costs	**1 768 688,0**	**978 368,0**	**1 046 746,2**	**2 025 114,1**	55%	59%	114%	**-256 426,1**
	Equipment	**110 000,0**	**87 586,6**	**10 877,2**	**98 463,8**	80%	10%	90%	**11 536,2**
	Travel	**125 000,0**	**31 199,0**	**65 581,3**	**96 780,3**	25%	52%	77%	**28 219,7**
	Other costs	**84 837,2**	**45 767,2**	**34 778,0**	**80 545,2**	54%	41%	95%	**4 292,0**
	Total Costs	**2 088 525,2**	**1 142 920,7**	**1 157 982,7**	**2 300 903,4**	**55%**	**55%**	**110%**	**-212 378,2**

Table 2: Cost-budget Follow-up.

Section 2 – Form C1 Financial statement per activity for the contractual reporting period, to be completed by each contractor (see Appendices 5-11)

See annexed files or pages.

[1] For instructions to contractors on the correct completion of the Form C see the Guide to financial issues at http://dbs.cordis.lu/fep-cgi/srchidadb?ACTION=D&SESSION=&DOC=1&TBL=EN_DOCS&RCN=EN_RCN:2034005&CALLER=FP6_LIB

Section 3 – Summary financial report (see Appendices 5-11)

Type of Instrument	STREP	Project Title (or Acronym)	PATRES					Contract N°	43268	
Reporting period number	2	From (dd/mm/yyyy)	01/08//2008		To (dd/mm/yyyy)	31/01/2010			Page	1/1

Contractor n°	Organisation Short Name	Cost model used	Eligible costs (in €)	Type of activities: Research and Technological Development / Innovation (A)			Type of activities: Management of the consortium (D)			Total eligible costs			Receipts		
				Contractor	AC Third party(ies)	FC/FCF Third party(ies)	Contractor	AC Third party(ies)	FC/FCF Third party(ies)	Contractor	AC Third party(ies)	FC/FCF Third party(ies)	Contractor	AC Third party(ies)	FC/FCF Third party(ies)
1	Cemagref	FC	Direct eligible costs	228 948,12			7 972,43			236 920,55	0,00	0,00			
			of which direct eligible costs of subcontracting							0,00	0,00	0,00			
			Indirect eligible costs	127 409,63			4 436,66			131 846,29	0,00	0,00			
			Adjustment on previous period(s)							0,00	0,00	0,00			
			Total eligible costs	*356 357,75*	*0,00*	*0,00*	*12 409,09*	*0,00*	*0,00*	368 766,84	0,00	0,00			
2	UniS	AC	Direct eligible costs	105 315,97			3 200,55			108 516,52	0,00	0,00			
			of which direct eligible costs of subcontracting				*3 200,55*			3 200,55	0,00	0,00			
			Indirect eligible costs	21 063,19						21 063,19	0,00	0,00			
			Adjustment on previous period(s)							0,00	0,00	0,00			
			Total eligible costs	*126 379,16*	*0,00*	*0,00*	*3 200,55*	*0,00*	*0,00*	129 579,71	0,00	0,00			
3	UIB	FC	Direct eligible costs	154 525,26			7 899,07			162 424,33	0,00	0,00			
			of which direct eligible costs of subcontracting	*0,00*			*3 800,00*			3 800,00	0,00	0,00			
			Indirect eligible costs	89 260,69			2 757,44			92 018,13	0,00	0,00	18 500,00		
			Adjustment on previous period(s)	5 278,96			207,41			5 486,37	0,00	0,00			
			Total eligible costs	*249 064,91*	*0,00*	*0,00*	*10 863,92*	*0,00*	*0,00*	259 928,83	0,00	0,00			
4	UFZ	FC	Direct eligible costs	172 298,84			504,21			172 803,05	0,00	0,00			
			of which direct eligible costs of subcontracting							0,00	0,00	0,00			
			Indirect eligible costs	116 581,44						116 581,44	0,00	0,00			
			Adjustment on previous period(s)	-3 731,30						-3 731,30	0,00	0,00			
			Total eligible costs	*285 148,98*	*0,00*	*0,00*	*504,21*	*0,00*	*0,00*	285 653,19	0,00	0,00			
5	CNRS	FCF	Direct eligible costs	95 045,09						95 045,09	0,00	0,00			
			of which direct eligible costs of subcontracting							0,00	0,00	0,00			
			Indirect eligible costs	19 009,02						19 009,02	0,00	0,00			
			Adjustment on previous period(s)							0,00	0,00	0,00			
			Total eligible costs	*114 054,11*	*0,00*	*0,00*	*0,00*	*0,00*	*0,00*	114 054,11	0,00	0,00			
Total eligible costs				1 131 004,91	0,00	0,00	26 977,77	0,00	0,00	1 157 982,68	0,00	0,00	18 500,00	0,00	0,00
				1 131 004,91			26 977,77			1 157 982,68			18 500,00		
Requested EC contribution for the reporting period (in €) without taking into account receipts				628 692,03	0,00	0,00	26 977,77	0,00	0,00						
				628 692,03			26 977,77			655 669,80					
Requested EC contribution for the reporting period (in €) taking into account receipts [=Periodic Invoice]										655 669,80					
Amount of the financial interests generated by the prefinancing															