Intelligent Tools for Policy Design

Deliverable 2.15 FUPOL Model Parameterization. Prototype Version

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Document description:	The objective of this document is to define the model parameterization for different domains

History

Version	Date	Reason	**Prepared / Revised by**
0.0	23/07/2014	Definition of TOC and data tables	Roman Buil, Miquel A. Piera
0.1	19/09/2014	Skopje - Bicycles parameterization update	Olatunde Baruwa, Nuria Barniol
0.2	30/09/2014	Yantai parameterization update	Wang Shaoyu, Nuria Barniol
0.3	02/10/2014	Pegeia parameterization	Constantinos Stylinou, Monica Gutierrez
Final	04/10/2014	final edition	Roman Buil

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1 Management Summary

This document pretends to be used as a parameterization example for any city using the FUPOL simulation software. Parameterization deliverables structure is modified in order to introduce the excel file with data tables used to generate the .csv files used as inputs for the simulation model. Parameterization deliverable consists on this document and one excel file for each domain with any parameterization update.
Parameterization will be updated along the full FUPOL project according to the validation and implementation of the models, into deliverables:

- D2.18 FUPOL Model Parameterization. Definitive Version (month 44)

Each deliverable will be focused in a particular policy, in concordance with the particular user case being developed at the same time; however, they will include the policy user cases that have had some update.

2 Document Guideline

2.1 Purpose of the Document

The main objective of this document is to specify the required data and its structure, in order to prepare a simulation scenario using FUPOL models. And also to present the data collected by the pilot cities.

2.2 Target group

The target group of Deliverable 2.11 are mainly the simulation end-users, which can be policy makers, city administration officials and citizens, because it contains the information about the indispensable data to be able to use the FUPOL simulation models developed. The document includes the specification of data tables or files type for the different sets of data required to properly formalize the simulation scenario.

The internal project target groups are the other team members dealing with WP3, WP4 and WP5 (regarding data visualization).

3 Bicycle Inter-Modality: Skopje (Update)

This section extends section 4 of deliverable 2.12.

3.1 Tables Update

The tracks table have been updated again in order to include the coordinates of the tracks in the map. The lines of the tracks inside the map were straight from one station to another and in reality they depend on the streets. There is a new excel file attached to this deliverable (InputData_BicycleSkopje_v9.7.xlsx) and including this update together with new data collected by the municipality of Skopje and Innovation.

3.1.1 Tracks

There is one more column in this table: "coordinates", which include a pair of values (separated by a coma) for each vertex (usually streets cross) in the track (See Figure 1).

quality of current bike track	bike track status	coordinates
0.25	3	42.0453728030386,21.3461995124816,42.0441139427222,21.3464140892028,42.0423132510658,21.347165107727,42.0410065225125,21.347
0.25	3	42.0275552181015,21.3530445098876,42.0267104321865,21.3526153564453,42.0236181012007,21.3487958908081,42.0218168287818,21.35
0.25	3	42.01862861092,21.3546109199523,42.0206053248249,21.3524222373962,
0	0	42.01862861092,21.3546109199523,42.016986616361,21.3567781448364,
0	0	42.0098123555201,21.3614130020141,42.01011528605,21.3613271713256,42.0106573669196,21.3607478141784,42.0110718962323,21.3601
0	0	42.0098123555201,21.3614130020141,42.0086165678403,21.3616061210632,42.008903559167,21.3600182533264,
0	0	42.0108168025634,21.3739657402038,42.0111675564593,21.3739871978759,42.0109363773311,21.3723886013031,
0	0	42.0096369755641,21.3705539703369,42.0101631169008,21.3725924491882,42.0109363773311,21.3723886013031,

Figure 1: New column for coordinates

4 Urban Economics: Yantai (Update)

There are not modifications in the Yantai tables. Some new data have been incorporated (See attached excel file: InputData_Yantai_v0.3.xls); however, it is not enough for simulations. It must be noticed that it is a little bit difficult to obtain this kind of data in China; therefore, the fieldwork will continue until the end of the project.

5 Sustainable Tourism - Pegeia

The data required for the FCM model are the activation levels assigned to concepts and the weight values assigned to causal relationships. Specifically for Pegeia, the data is given by experts/stakeholders with domain knowledge about the tourism in the city. Four experts were involved in providing the values.

5.1 Concept Activation Levels

Data for the activation levels is given as a real number in the range [-1,1] meaning that any concept can have a state ranging from a strong negative presence (-1) to a strong positive presence (+1). In order for the FCM model to use the data, the values are normalized so that one activation level is assigned to each concept. Table 1 shows the data received from the experts regarding activation levels.

Table 1: Concept Activation levels provided by experts for the FCM model of sustainable tourism for Pegeia

	Concept	Expert 1	Expert 2	Expert 3	Expert 4	Normalized
C01	Number of tourists	0.5000	0.5000	0.5500	0.4500	0.5000
C02	Investment	-0.2000	-0.5000	-0.4000	-0.3500	-0.3625
C03	Infrastructure	0.8500	0.8500	0.8500	0.8500	0.8500
C04	Facilities	0.7500	0.7500	0.7500	0.7500	0.7500
C05	Waste	0.4500	0.7000	0.6000	0.5500	0.5750
C06	Aesthetics	0.4000	0.5000	0.4000	0.4500	0.4375
C07	Pollution	0.3500	0.4500	0.3500	0.4000	0.3875
C08	Attractiveness of destination	0.5500	0.2000	0.2500	0.4500	0.3625
C09	Employment opportunity	-0.4000	-0.6000	-0.5000	-0.5000	-0.5000
C10	Migration	-0.3000	-0.2000	-0.3500	-0.3000	-0.2875
C11	Total population	0.4000	0.4000	0.4000	0.4500	0.4125
C12	Social issues	0.6500	0.8000	0.7500	0.6500	0.7125
C13	Tourism education and training	-0.6000	-0.4500	-0.3500	-0.5500	-0.4875
C14	Alternative forms of tourism	0.6000	0.6000	0.6000	0.6000	0.6000
C15	Quality of public services	-0.1000	0.2000	0.1000	0.1000	0.0750
C16	Quality of life	0.3000	0.5000	0.3500	0.4000	0.3875
C17	Cost of living	0.5500	0.5000	0.4500	0.5000	0.5000
C18	Seasonality	0.8500	0.8000	0.8000	0.8000	0.8125
C19	Development of other industries	0.6000	0.6000	0.6000	0.6000	0.6000
C20	Economic diversity	-0.5000	-0.6000	-0.6500	-0.6000	-0.5875
C21	Promotion of the use of local products	0.8500	0.8500	0.8500	0.8500	0.8500
C22	Sociocultural diversity	0.3500	0.3000	0.3500	0.2500	0.3125
C23	Promotion of place identity	0.7500	0.7500	0.7500	0.7500	0.7500
C24	Product quality	-0.1000	-0.2000	-0.2000	-0.2000	-0.1750
C25	State of natural environment	-0.0500	-0.2500	-0.2000	-0.1500	-0.1625
C26	Marketing public awareness	-0.6500	-0.7500	-0.6500	-0.7500	-0.7000

C27	Product diversification	-0.6500	-0.5000	-0.5500	-0.4500	-0.5375
C28	Overcrowding and congestion	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000
C29	Townscape	0.1000	0.2000	0.1500	0.1000	0.1375
C30	Protection of heritage/cultural sites	0.3500	0.1000	0.2500	0.2000	0.2250
C31	Sustainability	0.1000	0.0500	-0.0500	0.1000	0.0500

5.2 Causal Relationship Weight Values

Data for the weight values is again given as a real number in the range [-1,1] meaning that any causal relationship can have an influence ranging from a strong inhibitory effect (-1) to a strong excitatory effect (+1). In order for the FCM model to use the data, again the values are normalized so that one weight value is assigned to each causal relationship. Table 2 presents the data received from the experts regarding weight values.

Table 2: Causal relatinship weight values provided by experts for the FCM model of sustainable tourism for Pegeia

	Cause	Effect	Expert 1	Expert 2	Expert 3	Expert 4	Normalized
W01	**C01**	**C02**	0.7000	0.7500	0.7500	0.8000	0.7500
W02	**C01**	**C05**	0.6000	0.7500	0.7000	0.6000	0.6625
W03	**C01**	**C11**	0.5500	0.4000	0.5000	0.4000	0.4625
W04	**C01**	**C12**	0.6500	0.5000	0.5500	0.6500	0.5875
W05	**C01**	**C25**	-0.4500	-0.5500	-0.3000	-0.5000	-0.4500
W06	**C02**	**C03**	0.5500	0.4500	0.7000	0.6500	0.5875
W07	**C02**	**C04**	0.5000	0.5000	0.6500	0.7000	0.5875
W08	**C02**	**C14**	0.6000	0.5500	0.4000	0.4500	0.5000
W09	**C02**	**C21**	0.1500	0.2500	0.3500	0.2500	0.2500
W10	**C02**	**C23**	0.1500	0.3000	0.2500	0.3000	0.2500
W11	**C02**	**C26**	0.3500	0.4000	0.4000	0.2500	0.3500
W12	**C02**	**C30**	0.4000	0.4000	0.4500	0.4000	0.4125
W13	**C03**	**C08**	0.8500	0.7000	0.7500	0.8000	0.7750
W14	**C03**	**C09**	0.3000	0.2000	0.2500	0.4000	0.2875
W15	**C03**	**C15**	0.6000	0.6500	0.7000	0.7000	0.6625
W16	**C03**	**C24**	0.5000	0.5500	0.6000	0.4000	0.5125
W17	**C04**	**C08**	0.9000	0.7500	0.8500	0.7500	0.8125
W18	**C04**	**C13**	0.6000	0.5000	0.6000	0.5000	0.5500
W19	**C04**	**C15**	0.5000	0.6000	0.3500	0.4000	0.4625
W20	**C04**	**C24**	0.4500	0.5500	0.6000	0.5000	0.5250
W21	**C05**	**C06**	-0.7500	-0.8000	-0.8500	-0.7500	-0.7875
W22	**C05**	**C07**	0.7000	0.6500	0.7500	0.7000	0.7000
W23	**C05**	**C17**	-0.3500	-0.2000	-0.2000	-0.3000	-0.2625
W24	**C05**	**C29**	-0.5000	-0.5500	-0.4500	-0.5000	-0.5000
W25	**C06**	**C08**	0.8500	0.8000	0.7500	0.8000	0.8000
W26	**C07**	**C08**	-0.9000	-0.7500	-0.7500	-0.7500	-0.7875
W27	**C08**	**C01**	0.9000	0.9000	0.9000	0.9000	0.9000
W28	**C09**	**C10**	0.5500	0.7000	0.6000	0.7000	0.6375
W29	**C09**	**C16**	0.6000	0.4500	0.4500	0.5500	0.5125
W30	**C09**	**C19**	0.5000	0.5000	0.6000	0.6000	0.5500

W31	**C10**	**C11**	0.1500	0.3500	0.2000	0.1500	0.2125
W32	**C11**	**C12**	0.4500	0.3500	0.6000	0.3000	0.4250
W33	**C11**	**C28**	0.5500	0.5000	0.6500	0.7000	0.6000
W34	**C12**	**C08**	-0.4000	-0.4000	-0.4000	-0.5000	-0.4250
W35	**C12**	**C16**	-0.2000	-0.2000	-0.4000	-0.3500	-0.2875
W36	**C13**	**C09**	0.2000	0.1000	0.1500	0.1500	0.1500
W37	**C14**	**C13**	0.8000	0.7500	0.6500	0.7500	0.7375
W38	**C14**	**C18**	-0.7000	-0.6500	-0.7500	-0.6500	-0.6875
W39	**C14**	**C27**	0.5500	0.7000	0.5500	0.7500	0.6375
W40	**C15**	**C16**	0.6500	0.4500	0.5000	0.5000	0.5250
W41	**C15**	**C28**	-0.3500	-0.3000	-0.3500	-0.3500	-0.3375
W42	**C16**	**C31**	0.6000	0.5000	0.6000	0.5500	0.5625
W43	**C17**	**C16**	-0.6500	-0.5500	-0.5500	-0.7000	-0.6125
W44	**C18**	**C28**	0.6000	0.5500	0.5000	0.5000	0.5375
W45	**C18**	**C31**	-0.6000	-0.7500	-0.5500	-0.7000	-0.6500
W46	**C19**	**C20**	0.4500	0.5500	0.4500	0.2500	0.4250
W47	**C20**	**C31**	0.6500	0.7000	0.8000	0.7000	0.7125
W48	**C21**	**C20**	0.3500	0.2000	0.3500	0.2500	0.2875
W49	**C22**	**C19**	0.1000	0.1000	0.1000	0.2000	0.1250
W50	**C22**	**C31**	0.5000	0.3000	0.3500	0.3000	0.3625
W51	**C23**	**C08**	0.5000	0.5000	0.4500	0.5000	0.4875
W52	**C23**	**C22**	0.4500	0.3000	0.3000	0.4000	0.3625
W53	**C24**	**C31**	0.8500	0.7500	0.8000	0.9000	0.8250
W54	**C25**	**C08**	0.6500	0.6500	0.7500	0.8000	0.7125
W55	**C26**	**C12**	0.5000	0.5000	0.6000	0.5500	0.5375
W56	**C26**	**C25**	0.4000	0.5000	0.5500	0.6000	0.5125
W57	**C27**	**C08**	0.6000	0.6500	0.6000	0.7500	0.6500
W58	**C28**	**C07**	0.8000	0.6500	0.6500	0.6500	0.6875
W59	**C28**	**C24**	-0.6000	-0.7000	-0.7000	-0.5500	-0.6375
W60	**C29**	**C06**	0.5500	0.5500	0.5000	0.5000	0.5250
W61	**C30**	**C22**	0.5000	0.3500	0.5000	0.3500	0.4250
W62	**C30**	**C29**	0.6000	0.5000	0.4500	0.5000	0.5125
W63	**C31**	**C02**	0.7000	0.7500	0.8000	0.7500	0.7500