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Use of Technology of Hydroinformatics in Central and Eastern Europe during last decade (DHI retro view)

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Introduction



- DHIGoup and DHI CEE cluster (CZ, HU, SK, PL, BG, RO)
- DHI CEE more than 10 years experience

Attractive Conditions

- Urban Master plans 91/271/EEC
- ISPA, Structural and Cohesion funds
- EU directives (flood directive, WFD)
- RDI and Innovation
- Climate change, flush floods,...



Urban drainage master planning Impact of Hydroinformatics on master planning



• New approaches

- Integrated processes (hydrology, transport processes HD+WQ in sewer and rives, WWTP, sediment transport,...)
- Integrated digital data management
- Scenarios, alternatives
- Temporal aspects (time series,...)
- Continuity of MP

New evaluation possibilities

- Evaluation of present performance of urban drainage
- Sewerage surcharge analysis
- Proposal for a technical measures in urban drainage system
- Economical analyses of proposed measures
- Sewerage long term reconstruction plans
- Water quality profiles of the rivers and creeks
- CSO`s long term functionality evaluation
- Quantitative and qualitative impact of CSO's on water courses
- Overall balance of waste water and pollution production and inflow to WWTP
- Evaluation of WWTP efficiency
- City flooding

New requirements, needs

- Data quantity and quality
- Professionalists from IT, environmental science, software development
- Communication means and tools

Prague Urban drainage master plan



Year: 1999-2001

- Sewer + River
- Monitoring
- Digi data
- New results











Prague Urban drainage master plan



Sofia Drainage Area Plan (DAP)



Year: 2002-2003

- IAS survey
- manhole survey
- Detailed calibration requirements



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-										
Ref	Comparative analysis Event A			Within Criteria?	Event B	Within Criteria?	Event C	With in Criteria?	Average	Within Criteria?
ŝ.	Peak Flow s	(%)	13.0	YES	-6.0	YES	-18.4	NO	-3.8	YES
FS61	Flow Volume	(%)	28.4	ND	15.1	YES	1.9	YES	15.1	YES
	Peak Depths	(mm)	85.0	YES	34.0	YES	20.0	YES	46.3	YES
	Reak Flow s	(96)	11.3	YES	13.0	YES	-38.1	NO	-4.6	YES
FS62	Flow Volume	(%)	0.7	YES	-1.5	YES	-27.4	29	-9.4	YES
	Peak Depths	(mm)	70.0	YES	43.0	YES	5.0	YES	393	YES



Sofia Drainage Area Plan (DAP)



Hydroinformatics technology



Brno Urban drainage master plan

D.5.1



Year: 2008-2010

- City flood defense
- Flood hazard and risk maps
- WQ in rivers
- SWM, water harvesting
- Integration in City planning
- Risk analysis







Brno Urban drainage master plan





Transfer of technology and supply



- EC funded projects for CEE under ISPA, EUROPAID, Cohesion Funds
- Supply and training on modeling, Hydroinformatics



N:	RWC	Serves to [inh.]	MUWD	MU CS	MU Trained staff	NIVUS [pcs.]
1	Burgas	~ 425 000	1	1	2+2	2
2	Dobrich	~ 225 000	1	1	2+2	2
3	Gabrovo	~ 95 000	1	1	2+2	2
4	Kurdzhali	~ 200 000	1	1	2+2	2
5	Kistendil	~ 120 000	1	1	2+2	2
6	Pernik	~ 150 000	1	1	2+2	2
7	Plovdiv	~ 720 000	0	1	0+2	3
8	Ruse	~ 275 000	1	1	2+2	2
9	Sliven	~ 230 000	1	1	2+2	2
10	Veliko Tarnovo	~ 300 000	1	1	2+2	2
11	Vidin	~ 125 000	1	1	2+2	2
12	Vratza	~ 240 000	0	1	0+2	2
13	Yambol	~ 150 000	1	1	2+2	2
14	Balchik	part of Dobrich	1	1	2+2	1
15	Shumen	~ 215 000	1	1	2+2	3
16	Smolian	~ 130 000	1	1	2+2	1
17	Varna	~ 460 000	1	1	2+2	3
18	Gorna Oriahovitsa	part of V.Tarnovo	1	1	2+2	1
19	Lyaskovts	part of V.Tarnovo	1	1	2+2	1
Total:		4 060 000	17	19	34+38	37





Large Infrastructural Projects



ISPA, Structural and Cohesion Funds

Technical assistance for projects preparation in water sector – group A – Burgas, Gabrovo, Kustendil, Ruse, Sliven and Vratsa", EU OJ 2008/S 144-193996

- *Population: 1.5 mio. (20%)*
- Water supply and urban drainage projects
- Need for model based proposal of investment measures





Innovative and emerging technologies PH RDI (Research, Development, Innovation)

• <u>5,6,7th Framework Programme EC</u>

- APUSS sewer infiltration detection
- Daywater adaptive DSS for SWM
- HarmonQA
- HarmonIT
- SCIER Fire & Flood early warning

Cross border cooperation - INTERREG

Raindrop – storm water control

Local sources

- TACR ALFA, OMEGA
- VAV



www.anigroup.com

Innovative and emerging technologies



dhigroup.com



www.dhigroup.com

Innovative and emerging technologies

Mike Urban – integrated software package for urban water cycle modeling

Atti Software



- Open architecture
- Use of geodatabase
- Integrated simulation models
- Integrated data structures
- Adaptable user environment





Conclusions

- 10 years of very good conditions
- Modeling technology mature
- Better understanding of needs for model
- Data availability still a challenge
- Role of Legislation
- Guidelines, best practices
- Local market constrains





АСОЦИАЦИЯ НА ЕКСПЕРТИТЕ ПО ПРЕЧИСТВАНЕ НА ВОДАТА В РЕПУБЛИКА ЧЕХИЯ

Специализирана група Отводняване на урбанизираните територии

Методически наръчник

Оценяване на канализационните системи в урбанизираните водосбори



MAPT 2009

АСОДИАДИЯ НА ЕКСПЕРТИТЕ ПО ПРЕЧИСТВАНЕ НА ВОДАТА В РЕПУЕЛИКА ЧЕХИЯ





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Thank you for your attention

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