

# CORP 2004

## GEO•MULTIMEDIA•04

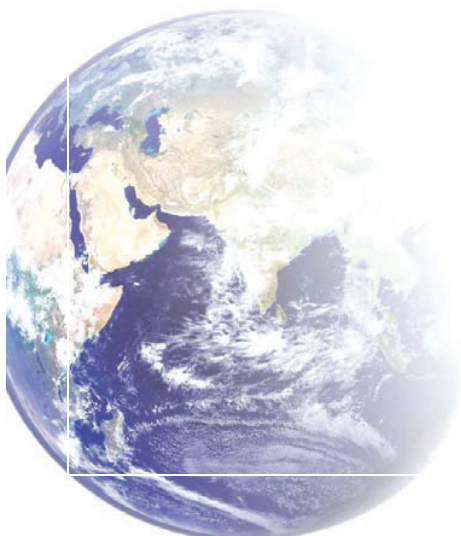
**TAGUNGSBAND / PROCEEDINGS**

**Manfred Schrenk (Hg./Ed.)**

**Treffpunkt der PlanerInnen**  
meeting - place for planners

9. internationales Symposium zur Rolle der  
Informationstechnologie in der Stadt- und Regionalplanung  
sowie zu den  
Wechselwirkungen zwischen realem und virtuellem Raum

9th international symposium on  
info- & communication technologies in urban & spatial planning  
and  
impacts of ICT on physical space



[www.corp.at](http://www.corp.at)

Manfred SCHRENK (Hg. / Ed.)

**C O R P 2 0 0 4**

**GEO MULTIMEDIA 04**

**COMPUTERGESTÜTZTE RAUMPLANUNG**

**COMPUTER AIDED SPATIAL PLANNING**

Beiträge zum 9. Symposium zur Rolle der  
**INFORMATIONSTECHNOLOGIE**  
in der  
**STADT – UND RAUMPLANUNG**  
sowie zu den

**WECHSELWIRKUNGEN ZWISCHEN REALEM UND VIRTUELLEM RAUM**

Proceedings of 9th symposium on  
**INFO- & COMMUNICATION TECHNOLOGY**  
in  
**URBAN- AND SPATIAL PLANNING**  
and  
**IMPACTS OF ICT ON PHYSICAL SPACE**

February 25 - February 27, 2004  
Technische Universität Wien / Vienna University of Technology

**C O R P**

**2 0 0 4**

**GEO MULTIMEDIA 04**

**COMPUTERGESTÜTZTE RAUMPLANUNG**

**COMPUTER AIDED SPATIAL PLANNING**

Beiträge zum 9. Symposium zur Rolle der  
INFORMATIONSTECHNOLOGIE

in der

STADT – UND RAUMPLANUNG

sowie zu den

WECHSELWIRKUNGEN ZWISCHEN REALEM UND VIRTUELLEM RAUM

Proceedings of 9th symposium on

INFO- & COMMUNICATION TECHNOLOGY

in

URBAN- AND SPATIAL PLANNING

and

IMPACTS OF ICT ON PHYSICAL SPACE

February 25 - 27, 2004

Technische Universität Wien / Vienna University of Technology

herausgegeben von / edited by

**MANFRED SCHRENK**

**Im Selbstverlag des Instituts für**

**EDV-gestützte Methoden in Architektur und Raumplanung  
der Technischen Universität Wien, Treitlstraße 3, A-1040 Wien**

**WIEN, 2004**

**ISBN 3-901673-11-2**

Alle Rechte vorbehalten / All rights reserved.

Herausgeber / Editor:  
Manfred Schrenk, Baumgasse 28, A-1030 Wien

Medieninhaber und Verleger / Publisher:  
Institut für EDV-gestützte Methoden in Architektur und Raumplanung der Technischen Universität Wien /  
Department of computer aided planning and architecture, Vienna University of Technology

Vorstand / Head of Department: O.Univ.Prof. Dr. Georg FRANCK,  
Treitlstraße 3, A-1040 Wien

**ISBN 3-901673-11-2**

Die Arbeiten geben die Ansichten des jeweiligen Autors wieder  
und müssen nicht mit den Ansichten des Herausgebers übereinstimmen

## INHALTSVERZEICHNIS / TABLE OF CONTENTS

<b>VORWORT / PREFACE</b> .....	<b>5</b>
.....	5
<b>PLANNING IN THE INFORMATION AGE: OPPORTUNITIES AND CHALLENGES OF E-PLANNING</b> .....	<b>15</b>
Milica BAJIC BRKOVIC .....	15
<b>SMART COMMUNITIES: A CALIFORNIA MASTER-PLANNED COMMUNITY CASE STUDY</b> .....	<b>23</b>
Richard STEPHENS .....	23
<b>URBAN GALLERY, URBAN CURATION</b> .....	<b>27</b>
Raoul BUNSCHOTEN .....	27
<b>CAN PLANNING MEDIATE BETWEEN SUSTAINABLE COMMUNITIES AND DIGITAL DIVIDE?</b> .....	<b>31</b>
Judith RYSER .....	31
<b>KNOWLEDGE -BASED URBAN AND REGIONAL DEVELOPMENT IN THE ICT AGE - THE RICH AND THE LATECOMERS</b> .....	<b>39</b>
Paul DREWE .....	39
<b>HIGH TECH AND HIGH TOUCH IN CHINESE SETTLEMENTS – COMMUNICATION AND SUSTAINABILITY IN THE EU-PROJECT SUCCESS</b> .....	<b>45</b>
Heidi DUMREICHER & Bettina KOLB .....	45
<b>THE IMPACT OF NEW TECHNOLOGIES ON REGIONAL AND URBAN DEVELOPMENT</b> .....	<b>55</b>
José María YAGÜE MATA.....	55
<b>CITY DOCUMENTATION: CREATION AND VISUALIZATION OF HIGH RESOLUTION PANORAMIC IMAGE MOSAICS</b> .....	<b>59</b>
Mario SORMANN & Gerald SCHRÖCKER & Andreas KLAUS & Konrad KARNER.....	59
<b>CONSTRUCTION SUPPLY CHAIN MANAGEMENT AND COORDINATED DESIGN DRAWINGS: AN OUTLOOK OF THE CONSTRUCTION INDUSTRY AND SUSTAINABLE URBAN PLANNING</b> .....	<b>67</b>
Syahriah BACHOK & Sharifah Mazlina Syed KHUZZAN AL-HABSHI & Samsuddin JAAFAR & Hairizal BAHARUDIN .....	67
<b>DIGITAL ATLAS OF LANDS AND HUMAN IMPACT ON THE ENVIRONMENT BY THE EXAMPLE OF NURATAU</b> ...	<b>85</b>
Iskandar T. MUMINOV & Shukhrat Sh. ZAKRIOV .....	85
<b>FREE SOFTWARE: THE OPEN (GIS) SOURCE SOLUTION FOR LOCAL GOVERNMENTS A CASE STUDY: PERSPECTIVES, EXPERIENCE AND POSSIBILITIES FOR THE CITY OF FRANKFURT (ODER)</b> .....	<b>91</b>
Till ADAMS & Michel GARAND .....	91
<b>BUILDING SDIS WITH FREE SOFTWARE – THE DEEGREE PROJECT</b> .....	<b>97</b>
Jens FITZKE & Klaus GREVE & Markus MÜLLER & Andreas POTH .....	97
<b>NEW TECHNOLOGIES, RESEARCH AND MARGINAL RURAL REGIONS: THE STRATEGIC FORMULA PROMOTED BY ADIMMAC FOR THE LOCAL AGENDA 21 OF THE LA MANCHA ALTA CONQUENSE (SPAIN)</b> .	<b>105</b>
Teresa FRANCHINI & Francisco J. MARTINEZ & Maria A. MARTIN & Maria J. LOZANO & Raul ROMERO .....	105
<b>THE USE OF INFORMATION TECHNOLOGIES IN THE URBAN REDEVELOPMENT PROCESS IN THE CITY OF BALTIMORE, USA</b> .....	<b>111</b>
Graciela CAVICCHIA .....	111
<b>INTERNET BASED TOOL FOR ASSESSING REGIONAL LOCATION FACTORS</b> .....	<b>119</b>
Christian LINDNER .....	119
<b>COMMUNITY DESIGN OF A LIGHT-RAIL TRANSIT ORIENTED DEVELOPMENT USING CASEWISE VISUAL EVALUATION (CAVE)</b> .....	<b>123</b>
Keiron BAILEY & Ted GROSSARDT .....	123
<b>THE USE OF OPENGIS IN THE PUBLIC SECTOR BY THE EXAMPLE OF THE PUBLIC-PUBLIC-PARTNERSHIP - CITY OF MUNICH AND CHAMBER OF INDUSTRY AND COMMERCE FOR MUNICH AND UPPER BAVARIA</b> .....	<b>131</b>
Andreas FRITZSCHE & Markus SPRING .....	131
<b>VALUATION OF OPEN SOURCE FOR GOVERNMENTS</b> .....	<b>135</b>
Gabor LASZLO .....	135
<b>OPEN SOURCE AND FREE SOFTWARE: MORE THAN SAVING MONEY!</b> .....	<b>141</b>
Athina TRAKAS & Arnulf B. CHRISTL.....	141
<b>SUSTAINABILITY IN EUROPEAN UNION THROUGH THE FREE MARKET: THE EFFECTS ON THE PHYSIOGNOMY OF THE CITIES</b> .....	<b>147</b>
Roido MITOULA.....	147

<b>ENVIRONMENTAL MANAGEMENT INFORMATION SYSTEM - A TOOL FOR URBAN PLANNING IN DEVELOPING COUNTRIES</b> .....	<b>151</b>
Bernd DECKER .....	151
<b>CONTEMPORARY TECHNOLOGY-ENVIRONMENTAL PROTECTION-SUSTAINABLE DEVELOPMENT</b> .....	<b>157</b>
Panagiotis Al.PATARGIAS .....	157
<b>PEDESTRIAN NAVIGATION SYSTEM IN MIXED INDOOR/OUTDOOR ENVIRONMENT – THE NAVIO PROJECT</b> ..	<b>165</b>
Georg GARTNER & Andrew FRANK & Günther RETSCHER .....	165
<b>AUTOMATIC VEHICLE LOCATION SYSTEMS</b> .....	<b>173</b>
Sotirios MILIONIS .....	173
<b>PRESENTING A POTENTIAL BUS RAPID TRANSIT LINE WITH GIS, ANALYTICAL MODELS AND 3D VISUALIZATION</b> .....	<b>179</b>
Xinhao WANG & Hexiang HUANG & Jun SHI.....	179
<b>CIVIC NETWORKS OF THE SREM DISTRICT – OVERCOMING OR INDICATING THE DIGITAL DIVIDE?</b> .....	<b>185</b>
Mirjana DEVETAKOVIC RADOJEVIC .....	185
<b>VIRTUAL HEART OF CENTRAL EUROPE</b> .....	<b>193</b>
Andrej FERKO & Jozef MARTINKA & Mario SORMANN & Konrad KARNER & Jiri ZARA & Sebastian KRIVOGRAD .....	193
<b>GIS SUPPORTS URBAN PLANNING IN PRAGUE</b> .....	<b>201</b>
Jiří ČTYROKÝ & Jana IROVÁ .....	201
<b>PROMOTING SUSTAINABLE SPATIAL DEVELOPMENT BY ICT</b> .....	<b>207</b>
Juha TALVITIE.....	207
<b>IT MODELING EXPERIENCE IN URBAN AND REGIONAL DEVELOPMENT</b> .....	<b>213</b>
Marija MARUNA & Vladimir MARUNA.....	213
<b>ESTIMATIONS OF URBAN LAND USE BY FRACTAL AND CELLULAR AUTOMATA METHOD</b> .....	<b>219</b>
Mehmet Ali YUZER.....	219
<b>THE INFORMATION AND COMMUNICATION TECHNOLOGIES IMPACT IN URBAN PROCESS</b> .....	<b>227</b>
John TSOUDEROS & Despina DIMELLI & Andreas DIMITRIADIS .....	227
<b>THE VIRTUAL TRANSFER OR THE “RENAISSANCE” OF DRAMATURGY IN MULTIMEDIA</b> .....	<b>231</b>
Harald KRÄMER.....	231
<b>INTELLECTUAL SYSTEM OF THE COMPLEX ANALYSIS OF ECONOMIC DYNAMICS ON TIME SERIES</b> .....	<b>237</b>
A.M ABBASOV. & R.H GULMAMMADOV.....	237
<b>THE ROLE OF TELECOMMUNICATIONS IN SHAPING THE URBAN LANDSCAPE</b> .....	<b>251</b>
Olivier LEFEBVRE .....	251
<b>GREEK BIO-CLIMATIC DESIGN AND THE SUSTAINABLE DEVELOPMENT</b> .....	<b>255</b>
Joseph STEFANOUE & Michalis SIAKAVELLAS & Roido MITOULA .....	255
<b>DESIGNING A WEB-BASED PUBLIC PARTICIPATORY DECISION SUPPORT SYSTEM: THE PROBLEM OF WIND FARMS LOCATION</b> .....	<b>265</b>
Ana SIMÃO & Paul DENSHAM .....	265
<b>STANDARDS OF VISUALIZING HISTORIC URBAN SITES ON THE WEB</b> .....	<b>275</b>
Mohamed USAMA & Naoji MATSUMOTO .....	275
<b>EVALUATION OF VISUAL ATTRIBUTES IN URBAN PARKS USING CONJOINT ANALYSIS</b> .....	<b>285</b>
Isabella MAMBRETTI & Eckart LANGE & Willy A. SCHMID .....	285
<b>R.O.S.I. (REAL TIME ORIENTATION SUPER INTERACTIVE) THE NEW DIMENSION OF TOURISM INFORMATION</b> .....	<b>291</b>
Oliver IRSCHITZ.....	291
<b>THE ISSUES OF SYSTEM AND DATA INTEROPERABILITY FOR A EUROPEAN TOURIST INFORMATION SYSTEM</b> .....	<b>297</b>
Susanne STEINER & Barbara HOFER & Florian TWAROCH .....	297
<b>TEXTURE MANAGEMENT FOR HIGH-QUALITY CITY WALK-THROUGHS</b> .....	<b>305</b>
Gerd HESINA & Stefan MAIERHOFER & Robert F. TOBLER .....	305
<b>INTREST + EUROMAP: INTERMODAL DIGITAL NETWORK MODELS FOR EUROPE</b> .....	<b>309</b>
Thomas HAUPT & Michael ORTGIESE & Karsten M <sup>C</sup> FARLAND .....	309
<b>DOES THE GROWTH OF URBAN SETTLEMENTS FOLLOW A CERTAIN PATTERN? – ANSWERS GIVEN BY LONG-TERM MONITORING OF EUROPEAN CITY REGIONS</b> .....	<b>317</b>
Gotthard MEINEL & Michael WINKLER .....	317

<b>SOCIO-CULTURAL CONTRADICTIONS IN THE ARAB/ISLAMIC BUILD ENVIRONMENT AN EMPIRICAL STUDY OF ARRIYADH, SAUDIA ARABIA.....</b>	<b>325</b>
Abdulhakeem A. AL-HOKAIL.....	325
<b>MONITORING THE DEVELOPMENT OF INFORMAL SETTLEMENTS IN ULAANBAATAR, MONGOLIA.....</b>	<b>333</b>
Gankhuyag RADNAABAZAR & Monika KUFFER & Paul HOFSTEE .....	333
<b>LOW COST HIGH QUALITY 3D VIRTUAL CITY MODELS.....</b>	<b>343</b>
Milan FTÁČNIK & Peter BOROVSÝ & Martin SAMUELČÍK .....	343
<b>DESIGN OF A 3D VIRTUAL GEOGRAPHIC INTERFACE FOR ACCESS TO GEOINFORMATIN IN REAL TIME ....</b>	<b>351</b>
Lars BODUM.....	351
<b>CYBERCITY MODELER, GENERATION, UPDATING AND CONTINUATION OF 3D-CITY MODELS WITH ON-LINE-EDITING – VISUALIZATION WITH TERRAINVIEW 2.0 .....</b>	<b>359</b>
Franz STEIDLER & Michael BECK .....	359
<b>3D-VISUALISATION OF VIENNA'S SUBSURFACE .....</b>	<b>367</b>
Sebastian PFLEIDERER & Thomas HOFMANN.....	367
<b>DEVELOPING ICT TOOLS FOR PUBLIC PARTICIPATION IN PUBLIC SPACES IMPROVEMENT PROCESS - PUBLIC ART &amp; PUBLIC SPACE (PAPS) BELGRADE PILOT PROJECT RESULTS -.....</b>	<b>373</b>
Zoran DJUKANOVIC & Jelena ZIVKOVIC & Coauthor Ksenija LALOVIC .....	373
<b>DEVELOPMENT OF GIS IN URBAN PLANNING AGENCIES IN SERBIA – EXPERIENCES OF TOWN PLANNING INSTITUTE OF BELGRADE.....</b>	<b>379</b>
Ksenija LALOVIC .....	379
<b>BUILDING THE ICT FUNDAMENT FOR LOCAL E-GOVERNMENT IN SERBIA - MUNICIPALITY OF LOZNICA EXAMPLE.....</b>	<b>385</b>
Ksenija LALOVIC & Zoran DJUKANOVIĆ & Coauthor Jelena ZIVKOVIC .....	385
<b>THE DRIVING FORCES OF IT REGIONS - INNOVATION UND TECHNOLOGIE ALS MOTOREN DER REGIONALENTWICKLUNG - BEST PRACTISE IN OBERÖSTERREICH .....</b>	<b>393</b>
Gabriela HINTERBERGER .....	393
<b>VIENNA IT ENTERPRISES „DAS INNOVATIVE IT_NETZWERK“.....</b>	<b>399</b>
Bernhard SCHMID & Heinrich WEBER .....	399
<b>GENDER ALP! QUALITÄTSSICHERUNG IN DER RAUMPLANUNG: METHODEN UND UMSETZUNG VON BEDARFS- UND GESCHLECHTERGERECHTER PLANUNG IM ALPENRAUM .....</b>	<b>403</b>
Christine ITZLINGER, Romana ROTSCHOFF, Heidrun WANKIEWICZ.....	403
<b>DOKUMENTATION EISENSTRASSE – EINE REGION IST AUF SCHATZSUCHE. WWW.EISENSTRASSE.INFO INTERNETPORTAL &amp; DOKUMENTATION BRINGEN DEN KULTURPARK EISENSTRASSE-ÖTSCHERLAND ZUM BLÜHEN .....</b>	<b>407</b>
Heidemarie THONHOFER & Manfred SCHRENK .....	407
<b>WEBBASIERTER VERNETZUNG: INSTRUMENT EINER INTEGRIERTEN REGIONALENTWICKLUNG .....</b>	<b>413</b>
Stefan GÄRTNER & Judith TERSTRIEP.....	413
<b>REGIONALPLANUNG IM INTERNET – BUNDESWEITE STATUS-QUO-ANALYSE UND EMPFEHLUNGEN FÜR DIE ÖFFENTLICHKEITSARBEIT UND BETEILIGUNG .....</b>	<b>421</b>
Tanja FRAHM & Holger GNEST.....	421
<b>REGIONALE UND KOMMUNALE INTERNETPORTALE – EIN INSTRUMENT DER REGIONALEN ENTWICKLUNG UND ZUSAMMENARBEIT? .....</b>	<b>429</b>
Matthias KOCH .....	429
<b>DIE NÖ BREITBANDINITIATIVE – NIEDERÖSTERREICHS WEG IN DIE INFORMATIONSGESELLSCHAFT.....</b>	<b>437</b>
Christoph WESTHAUSER .....	437
<b>INTEGRATION VON GEO- UND CONTENT-ORIENTIERTEN WEB-DIENSTEN: EINE OGC-KONFORME LÖSUNG AUF BASIS DER OPENSOURCE SOFTWARE DES GIS-PROJEKTS DEGREE UND DER COREMEDIA© SMART CONTENT TECHNOLOGY.....</b>	<b>443</b>
Joachim W. SCHMIDT & Kai-Uwe KRAUSE & Olaf BAUER & Niels HOFFMANN & Rainer MARRONE .....	443
<b>INTERAKTIVE BILDSCHIRMKARTEN: INSTRUMENT DES WISSENSMANAGEMENTS ALS GRUNDLAGE FÜR PLANUNGSPROZESSE (AM BEISPIEL DES NATIONALPARKS BERCHTESGADEN) .....</b>	<b>449</b>
Sabine HENNIG.....	449
<b>WORKING ARCHITECTURE .....</b>	<b>457</b>
Gregor HARTWEGER .....	457

<b>E-GOVERNMENT IN DER STRAßENVERWALTUNG. BEHÖRDENINTEGRATION SCHAFFT HOCHWERTIGE DATEN UND PLANUNGSGRUNDLAGEN IM VERKEHRSBEREICH. ....</b>	<b>463</b>
Stefan KOLLARITS & Irmgard MANDL-MAIR .....	463
<b>NETZWERK GEOINFORMATION TIROL REGIONALE VERFÜGBARKEIT ÖFFENTLICHER GEODATEN IN EINEM DATA WAREHOUSE .....</b>	<b>471</b>
Manfred RIEDL & Hannes NIEDERTSCHEIDER .....	471
<b>LOKALE GEODATENINFRASTRUKTUREN: POTENTIALE UND AUSWIRKUNGEN AM BEISPIEL BRANDENBURGS .....</b>	<b>475</b>
Petra KÖHLER & Joachim WÄCHTER .....	475
<b>INTERAKTIVE LANDSCHAFTSPANUNG IN KÖNIGSLUTTER AM ELM .....</b>	<b>483</b>
Roland HACHMANN .....	483
<b>STADTQUARTIERE IM INFORMATIONSZEITALTER – ERFOLGSFAKTOREN VON PROJEKTEN .....</b>	<b>489</b>
Holger FLOETING .....	489
<b>STADTTECHNOPOLE_KAISERSLAUTERN: IUK ALS MOTOR DER STADTENTWICKLUNG. ....</b>	<b>497</b>
Gerhard STEINEBACH & Christine DAU & Verena LEIS-MAYER .....	497
<b>VIENNA-SPIRIT – INTERMODALE REISEINFORMATION ALS BEITRAG ZU EINER NACHHALTIGEREN STÄDTISCHEN UND REGIONALEN VERKEHRSENTWICKLUNG .....</b>	<b>503</b>
Stefan BRUNTSCH & Birgit LÖCKE & Günther NIEDOBA & Karl REHRL & Günther STRAUS & Andrea STÜTZ .....	503
<b>OPENSOURCE FÜR GEODATENINFRASTRUKTUREN – EINE ECHTE ALTERNATIVE? .....</b>	<b>511</b>
Martin MAY & Stephan MERTEN & Johannes BRAUNER .....	511
<b>OPEN SOURCE ALS APPLIKATION: CONTENT-MANAGEMENT-SYSTEME IN KOMMUNAL- UND REGIONALPORTALEN.....</b>	<b>519</b>
Matthias Koch .....	519
<b>DIENTE-BASIERTE AUFBEREITUNG VON GELÄNDEMOTELLEN FÜR DIE 3D-GEOVISUALISIERUNG .....</b>	<b>527</b>
Martin MAY & Torsten HEINEN .....	527
<b>STECKT DER TEUFEL IM DETAIL? EIGNUNG UNTERSCHIEDLICHER DETAILGRADE VON 3D-LANDSCHAFTSVISUALISIERUNG FÜR BÜRGERBETEILIGUNG UND ENTSCHEIDUNGSUNTERSTÜTZUNG .....</b>	<b>535</b>
Philipp PAAR & Olaf SCHROTH & Ulrike WISSEN & Eckart LANGE & Willy A. SCHMID .....	535
<b>EINE STADT WIRD DREIDIMENSIONAL: 3D STADTMOTEL BAMBERG.....</b>	<b>543</b>
Tony POESCH & Ralph SCHILDWÄCHTER & Peter ZEILE .....	543
<b>VON EINER ÖSTERREICHGLIEDERUNG NACH GEMEINDEN ZU PLANQUADRATEN: STATISTIK AUSTRIA ERWEITERT SEIN REGIONALSTATISTISCHES ANGEBOT.....</b>	<b>549</b>
Ingrid KAMINGER & Erich WONKA .....	549
<b>ADRESSGEOKODIERUNG BEI DER ÖSTERREICHISCHEN POST AG .....</b>	<b>555</b>
Karel MAURIC .....	555
<b>ASTER-HÖHENDATEN IM NATIONALEN UND INTERNATIONALEN VERGLEICH .....</b>	<b>559</b>
Peter DREXEL & Josef GSPURNING .....	559
<b>PLANUNG DES ÖFFENTLICHEN RAUMES - DER EINSATZ VON NEUEN MEDIEN UND 3D VISUALISIERUNGEN AM BEISPIEL DES ENTWICKLUNGSGEBIETES ZÜRICH-LEUTSCHENBACH.....</b>	<b>569</b>
Peter PETSCHKE & Eckart LANGE .....	569
<b>ÜBERTRAGUNG VON GEOMETRIE UND SEMANTIK AUS IFC-GEBÄUDEMOTELLEN IN 3D-STADTMOTELLE .</b>	<b>573</b>
Joachim BENNER & Klaus LEINEMANN & Arnold LUDWIG .....	573
<b>BENUTZERSCHNITTSTELLEN IN DER MULTIMEDIALEN 3D KARTOGRAFIE – EINE GEGENÜBERSTELLUNG .</b>	<b>579</b>
Markus JOBST.....	579
<b>EFFIZIENTE ERZEUGUNG VON 3D STADTMOTELLEN AUS VORHANDENEN VERMESSUNGSDATEN .....</b>	<b>585</b>
Johannes HOLZER & Gerald FORKERT .....	585
<b>GIS-EINSATZ IM RAHMEN EINES MONITORINGS BERGBAUBEDINGTER UMWELTEINWIRKUNGEN .....</b>	<b>591</b>
R. ROOSMAN* & S. NICKEL & W. BUSCH & J. GORCZYK & F. MAUERSBERGER & P. VOSEN .....	591
<b>DARSTELLUNG VON ZEITREIHEN RÄUMLICHER DATEN MITTELS WEBMAPPING.....</b>	<b>599</b>
Andreas HOCEVAR & Daniela LUNAK & Leopold RIEDL .....	599
<b>NEUE PERSPEKTIVEN IN DER FOTOGAMMETRIE DURCH EINE INNOVATIVE GROßFORMATIGE DIGITALE LUFTBILDKAMERA .....</b>	<b>607</b>
Rainer KALLIANY & Gerhard PFAHLER & Harald MEIXNER .....	607



<b>DER EINSATZ VON LASERSCANNING UND PHOTOGRAMMETRIE ZUR DOKUMENTATION DES URBANEN STRAßENRAUMES</b> .....	<b>613</b>
Gerald FORKERT .....	613
<b>ONLINE PRÜFFPROGRAMM FÜR GEODATEN: ABC-GEODATA.COM</b> .....	<b>621</b>
Axel AXMANN.....	621
<b>LASERSCANNING IN DER RAUMPLANUNG</b> .....	<b>625</b>
Heinz BUSCH & Jürg LÜTHY .....	625
<b>DAS SYSTEMKONZEPT ZUM VERKEHRSDATENVERBUND WIEN IM RAHMEN DES WIENER VERKEHRSMANAGEMENTS</b> .....	<b>633</b>
Rainer HASELBERGER .....	633
<b>GABIS – GEMEINDESTRASSENANALYSE UND BEWERTUNG IM GIS DEMONSTRATION DER MACHBARKEIT EINER GIS-BASIERTEN BEWERTUNG DER GEMEINDESTRASSEN IN DEN FÜNF TESTGEMEINDEN HOLLENEGG, SCHWANBERG, SEMRIACH, STANZ IM MÜRZTAL UND WAGNA</b> .....	<b>641</b>
Reinhold DEUSSNER.....	641
<b>KONSENS DURCH KOMMUNIKATION CHANCEN UND STRATEGIEN FÜR NACHHALTIGE LÖSUNGEN BEI VERÄNDERUNGSPROZESSEN IN DER STADT- UND REGIONALENTWICKLUNG</b> .....	<b>647</b>
Christiana TAGHIAN & Michael WIKLUND .....	647
<b>GEOTALK: EINE RAUM-ZEIT-KOMMUNIKATIONSPLATTFORM</b> .....	<b>657</b>
Gerhard NAVRATIL & Max HARNONCOURT .....	657
<b>MODERATION INTERNETBASIERTER PLANUNGS- UND BETEILIGUNGSPROZESSE</b> .....	<b>665</b>
Stefanie ROEDER & Oliver MÄRKER & Susanne MICHAELIS & Annika POPENBORG & Stefan René SALZ & Nils ZIERATH .....	665
<b>DIE BERÜCKSICHTIGUNG DES LANDSCHAFTSBILDES BEI RAUMRELEVANTEN PLANUNGEN</b> .....	<b>673</b>
Georg HAUGER.....	673
<b>WINDPARKS: GIS-GESTÜTZTE PLANUNGSMETHODEN ZUR RÄUMLICHEN STEUERUNG</b> .....	<b>677</b>
Gregori STANZER & Christian SPANRING .....	677
<b>FUTURE LANDSCAPE(S) - MÖGLICHKEITSRÄUME ZWISCHEN POLARISIERUNG UND BALANCE</b> .....	<b>683</b>
Heinz DÖRR .....	683
<b>DIE BEWERTUNG DER NACHHALTIGKEIT INNOVATIVER STÄDTEBAULICHER MAßNAHMEN MIT DEM SIMULATIONSMODELL MARS</b> .....	<b>689</b>
Paul C. PFAFFENBICHLER & Günter EMBERGER .....	689
<b>UNTERSUCHUNG DER SIEDLUNGSENTWICKLUNG IN RELATION ZU FLÄCHENVERBRAUCH UND HAUSHALTSENTWICKLUNG IM OBERÖSTERREICHISCHEN ZENTRALRAUM</b> .....	<b>695</b>
Klaus STEINNOCHER & Günther KNÖTIG & Mario KÖSTL .....	695
<b>GIS-BASIERTE INFORMATIONSTRUMENTE ZUR UNTERSTÜTZUNG EINER NACHHALTIGEN ENTWICKLUNG DER FLÄCHENNUTZUNG IN SIEDLUNGS- UND VERDICHTUNGSRÄUMEN</b> .....	<b>701</b>
Johannes FLACKE .....	701
<b>METHODEN RÄUMLICHER AGGLOMERATIONSRAUMABGRENZUNG IN EUROPA. ANSÄTZE UND PRAKTISCHE ERFahrungen AUS DEM EU-FORSCHUNGSPROJEKT COMET</b> .....	<b>707</b>
Anita PÖCKL & Edgar HAGSPIEL .....	707
<b>DIE ERWEITERUNG DES ÖFFENTLICHEN RAUMES IN VIRTUELLE WELTEN</b> .....	<b>715</b>
Lev LEDIT .....	715
<b>NEUE ROLLE DER VIRTUELLEN REALITÄT IN DER ARCHITEKTUR UND STADTPLANUNG</b> .....	<b>721</b>
Frieder SCHUBERT.....	721
<b>DIE VIRTUELLE DATENBANK: TECHNOLOGIE ZUR UNTERSTÜTZUNG IN DER REGIONALPLANUNG</b> .....	<b>729</b>
Martin BRÄNDLI & Corina HÖPPNER.....	729
<b>MÖGLICHKEITEN UND NUTZEN VON OBJEKTIVIERTEN UNTERGRUNDMODELLEN UND DEREN INTEGRATION IN RAUMBEZOGENE INFORMATIONSSYSTEME</b> .....	<b>737</b>
Christian GAU & Joachim TIEDEMANN .....	737
<b>KSI<sub>UNDERGROUND</sub> – KOMMUNALE SERVICEPLATTFORM FÜR ABWASSER-INFRASTRUKTUREN</b> .....	<b>743</b>
Robert STEIN.....	743
<b>RÄUMLICHE DISAGGREGATION STATISTISCHER DATEN UNTER VERWENDUNG GEOGRAPHISCHER INFORMATIONSSYSTEME – ERSTE ERGEBNISSE</b> .....	<b>751</b>
Hartmut SCHUSTER & Marcelo ZÁRATE & Tatjana KRIMLY & Sylvia HERRMANN .....	751

<b>ERMITTLUNG DER POTENTIALE FÜR DIE AUSWEISUNG EINES BIOSPHÄRENRESERVATES IM NATURPARK SCHWARZWALD MITTE/NORD MIT GEOGRAPHISCHEN INFORMATIONSSYSTEMEN .....</b>	<b>757</b>
Ulrike PRÖBSTL & Rainer LAMPL .....	757
<b>GIS-GESTÜTZTE ANALYSE VON BERGGEBIETEN IN EUROPA .....</b>	<b>765</b>
Alexandra HILL & Christian LINDNER & Carsten SCHÜRMAN .....	765
<b>RISIKOMANAGEMENT FÜR IT-PROJEKTE .....</b>	<b>771</b>
Oliver F. LEHMANN .....	771
<b>PROJEKTDATEN FÜR ENTSCHIEDER – EFFEKTIVE NUTZUNG VON GEODATEN IM SYSTEM GEOHAUS .....</b>	<b>779</b>
Otmar SCHUSTER & Olaf LUDWIG & Martina BUSCH .....	779
<b>REGIONALE INNOVATION UND DAUERHAFTES ENTWICKLUNG IN EUROPA DAS BEISPIEL DER SPANISCHEN “CIUDADES DEL CONOCIMIENTO” .....</b>	<b>783</b>
Laura Garcia Vitoria LOECHEL & André Jean-Marc LOECHEL .....	783
<b>CONGO:DEUX EIN KONGOLESISCH-ÖSTERREICHISCHES GEMEINSCHAFTSPROJEKT SETZT AUF OPENSOURCE SOFTWARE IN DER SCHULBILDUNG.....</b>	<b>785</b>
Frank TENDAY LUABA & Ingo LANTSCHNER .....	785
<b>DAS VERKEHRSMODELL WIEN .....</b>	<b>791</b>
Roman RIEDEL & Paul HOLZAPFEL .....	791
<b>WORKSHOP: IT-SECURITY &amp; SAFETY .....</b>	<b>795</b>
Thomas HRDINKA .....	795
<b>ANTIKER WOHNKOMFORT - MODERNE BEDÜRFNISSE EINE PROGRESSIVE ANALYSE ZWISCHEN ARCHITEKTUR DES ALTERTUMS UND ZEITGENÖSSISCHE RAUMPLANUNG .....</b>	<b>799</b>
Zsolt VASAROS .....	799
<b>WISSENS-KULTURLANDSCHAFTEN WIE NACHHALTIGKEIT DURCH KULTIVIEREN WISSENSBASIERTER WERTSCHÖPFUNGEN – ALLER NUTZUNGEN + KÖRNUNGEN ERREICHT WERDEN KANN.....</b>	<b>801</b>
Jürgen PIETSCH .....	801
<b>BENCHMARKING REGIONALER INNOVATIONS DATEN: DER NUTZEN FÜR DIE REGIONALE PLANUNG .....</b>	<b>803</b>
Hansjörg BLÖCHLIGER .....	803
<b>PRAXISBERICHT OPENSOURCE-SOFTWARE FÜR PROJEKTMANAGEMENT: WWW.PROJEKTSTRUKTURPLAN.NET.....</b>	<b>805</b>
Dietmar SCHODER .....	805
<b>KUALA LUMPUR TOWARD A SUSTAINABLE AND COMPETITIVE GLOBALIZING CITY-REGION: CAN MULTIMEDIA SUPER CORRIDOR (MSC) BE A DRIVING FORCE? .....</b>	<b>807</b>
Hamzah JUSOH .....	807
<b>I-CITY: INFORMATION AND COMMUNICATION TECHNOLOGIES FOR URBAN PLANNERS:.....</b>	<b>809</b>
Matias ECHANOVE .....	809
<b>FINDING THE “INSTITUTIONAL SPACE” FOR DEMOCRATIC E-GOVERNANCE: INFORMATION AND COMMUNITY TECHNOLOGY (ICT) AND AREA-BASED MANAGEMENT (ABM) IN DURBAN, SOUTH AFRICA.....</b>	<b>811</b>
Nancy ODENDAAL .....	811
<b>CITY AND INFORMATION TECHNOLOGY: THEORETICAL CHALLENGE .....</b>	<b>813</b>
Tarik A. FATHY .....	813
<b>SUSTAINABLE USE OF IT IN URBAN PLANNING .....</b>	<b>815</b>
Wael Mohamed YOUSEF .....	815
<b>THE INFLUENCE OF E-SUPPLY CHAIN IN THE TRANSFORMATION OF URBAN SPACE.....</b>	<b>817</b>
M. VOYATZAKI .....	817
<b>UNDERSTANDING AND MODELLING THE CHALLENGES OF INFORMATION TECHNOLOGY IN URBAN AND REGIONAL DEVELOPMENT .....</b>	<b>819</b>
Hans Dieter KASPERIDUS .....	819
<b>THE ROLE OF SPACE TECHNOLOGIES IN TERRITORIAL MANAGEMENT.....</b>	<b>821</b>
Pedro MATOS .....	821
<b>GIS SUPPORTS PLANNING AND THE PUBLIC PARTICIPATION PROCESS WITH PLANNING SUPPORT SYSTEMS.....</b>	<b>823</b>
Milton OSPINA .....	823

# Planning in the Information Age: Opportunities and Challenges of E-Planning

*Milica BAJIC BRKOVIC*

(Professor Dr. Milica Bajic Brkovic, The University of The West Indies, Faculty of Engineering, Programme in Planning and Development  
St. Augustine Campus, Trinidad, bajicmb@eng.uwi.tt)

## 1 INTRODUCTION

During the last twenty years the planning profession has undergone a tremendous transformation. Not only have the planning philosophy and ideas changed, but the overall framework for the planning discipline has changed as well. The changing reality affects the way planners work, but it also encroaches on the very meaning of the profession itself, and the role it plays. The planning world of today is a different world, and a new culture of planning is on the horizon.

There are many important processes that participate in creating what is referred to as a new framework for the planning practice. While some argue that globalisation is a fundamental phenomenon of our time, others are of the view that the phenomenon of the information and communication explosion marks the era. Often placed on the top of development agenda world-wide, the two rank amongst the key determinants of the future of urban development. Taken alone however they do not determine the urban future nor do they guide and shape the cities independently of other forces - political, social, economic, environmental and cultural- their influence on urban development, and planning and management mechanisms, are undeniable and ever increasing. If globalisation reflects and demands fundamental changes in our ideas about society and the organization of space, it is also the case that the information and communication involve fundamental transformations in our concepts of the relationship between humanity and space, and indeed of the very concepts of humanity and space.

For some, it is planning in the era of globalisation that is the issue today, for the others it is the information age that provides the background. However, the two are interrelated and connected and often, they work together. Both are complex and multi-faceted phenomena, therefore most time neither one could be analysed and discussed independently from the other. For the purpose of focusing on particular relationship between the age of information and the planning practice, which is the focus of this conference and a general topic of this presentation, the reduction is necessary, and in this paper is being undertaken intentionally.

The key issue today is the mobility of information, which is the crucial factor in the world of international competition. A new generation of information and communication technologies creates a new opportunity for this process. The global electronic network supports mobility in space and time, and as such is relevant for any planning or development action, be it at a local, national or international level. Yesterday of a limited use, tomorrow will become an intrinsic part of the professional routine. E-space is not only a place where people meet meet but it is also an economic place, a powerful economic resource that fully participates in shaping development of many regions and cities world-wide. As such, it is vital to the planning profession. Transparency, efficiency and economy, the key words of the e-option, support a call for information networking on the Internet to channel organisational and operational resources for planning purposes.

This paper casts some light on the e-based planning option. Starting from the belief that it is the context that creates new opportunities and also make them successful, this is a general view on the reality within which planning is taking place today that will open the discussion, following which, discussion will focus upon the emerging e-based planning paradigm, and the questions associated with it. The potentials of the e-based alternative will be outlined and analysed against the principles of good planning practice. The challenges of the alternative will be highlighted/identified in the last section, and debated vis-à-vis the observed benefits. Implications for the concrete planning practice will be at the heart of the overall discussion.

## 2 A CHANGING LANDSCAPE OF THE PLANNING PROFESSION

A major transition from traditional and rule-book practice has already taken place world-wide. In the early days, planning was concerned with creating “grand plans” for building and construction. Spatial policies were used as a set of instruments to shape the welfare state and improve the overall living conditions as well. While this is still status quo in some countries, this is no longer the general rationale for planning practice in the most countries. Current efforts are focused on flexible and innovative planning practice that creates new opportunities as well as resources. “Planning becomes a vehicle for enabling private initiatives from citizens, firms and institutions, balancing different interests and managing uncertainty “ (van den Berg, 200). The ideal pattern is not the one that prescribes, but the one that provides and supports (Bajic Brkovic, 2002). The planning practice of today has a different, and a new role. It is aimed at creating flexible frameworks and orientation, while cities and regions continue to evolve.

There are several key shifts and key characteristics of the world today that underline this process. Some of them refer to the environment within which planning takes place, while others come from within the profession itself, either in response to stimuli from the outside world, or as a result of the ongoing internal transformation of the profession itself. While this discussion will name some of the shifts or key processes, it will neither exhaust nor close the list. It is only from the very perspective of the topic discussed in this paper, that they are seen as the most relevant.

**Globalisation - Regionalisation – Localisation.** Often described as a process of integrating national economies into the world market, or as a transitional passage from a high volume economy to the high value economy, globalisation is among the key world-wide phenomena that marks the turn of the century. The scope of globalisation certainly goes beyond economics and also embraces science and technology, politics and culture. Much emphasis has been placed on the social, technological, political and cultural structures and processes it embraces. It is said that globalisation deeply modifies the structural framework of rational choice and as such is relevant for planning and the planners’ practice.

In the 1990's the economic aspects of globalisation were in focus. From then on the pendulum swung towards other facets changing the entire vision. As globalisation has opened up national economies and increased the mobility of the factors of production, it has also reduced the power of the state to independently manage its affairs, giving national policies a new framework for development and implementation. A corresponding shift in planning took place, resulting in diminishing the need for comprehensive and grand plans for future development, and increasing interest for development control. The physical plans with a defined end state solutions are less often in demand, while supply of functional space is replaced by supply of opportunities. Planning is expected to provide development strategies and schemes, and an ultimate goal is a "framework" planning attuned to implementation and action. These processes have been accompanied by the ever increasing demand for information, communication and networking, resulting in a completely new and yet unseen environment for the planning practice.

**Sustainability.** Following the 1987 Brundtland report - that humanity has the ability to make development sustainable - to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs, the concept of sustainability grew into a much more complex system of values, and gradually advanced into a world-wide development strategy.

While many aspects of the sustainability are relevant for the planners' work, it is the call for social sustainability, developed as a counterpart to the globalisation process, that is impacting the profession today. The notion of diversity is in its fundamentals, and is among its key features. Diversity is not a question of culture only. Simplified and culture related interpretations belong to the past. Today, the notion of diversity is closely associated with the development of potentials or development options, as well as community and civic life. Diversity in planning, and planning for diversity thus has become a new motto in the profession. And again, it is within such a framework that communication and development of networks play a central role.

In the early days, planning products were exposed to the general public usually at the end of the planning process. Today, the sustainable practice calls for public involvement from the beginning and, consequently, co-operation and partnership have become *conditio sine qua non* of the planning standard. It is unlikely that, examples of the planning practice with no public involvement could be found any more. The top-down practice has been replaced by a model where partnership and public participation have a major role. Equity of access, and involvement of the stakeholders are but a new standard of the quality of the planning practice.

**Quality of life and urban democracy.** While the quality of life (defined in various ways) has been with planners since the early beginnings of their profession, it is a set of new attributes referring to the urban democracy and creation of open and transparent governance that makes it relevant for the discussion here.

There are many actors that ask for their share in development decisions, and the number of stakeholders or shareholders (as same prefer to say) that fully participate in the planning process has dramatically increased during the last two decades. Governments are less often in a position to set the planning stage, and the process of planning is often much more engaged in the task of building consensus around issues, and among the participants, than producing physical plans. Consultation meetings to which invited stakeholders come from the business community, unions, NGOs, representatives of the social sector, financial experts, urban specialists from academia, representatives of local communities and local residents' groups, and both politicians and civil servants from different levels of government, municipal, provincial and federal, most often create a real framework for planning actions. Active involvement and participation enhance local democracy which is placed among the key factors that define the quality of life.

The more actors there are the more communication is needed. Managing communication is a new challenge for the planning profession (van den Berg, 2003).

**The planning subject.** In the beginning, cities were viewed as enlarged architecture, the physical structures mainly defined by their physical characteristics and attributes. The first major change occurred during 60s and 70s, when planners discovered the complexity of social, economic or political forces and processes taking place behind, and within these physical structures. Gradually, the social and economic perception of place took over the physical form. A second big shift took place in the late 80s and early 90s. Today, there are a growing number of both theoreticians and practitioners who view cities as the complex structures of resources, processes and effects of these processes. These structures are dynamic, with numerous internal and external links, and rest on the two fundamentals: information and communication.

Such a perspective has an important message for planning by opening up new areas for the planners' work. Planning is more and more concerned with issues such as the search for information, access to information, creation of information networks, and the development of technologies and instruments, to work with and within these networks. Another side of the same process is communication. There is a growing need for the efficient ways and means to communicate information, as well as to establish links among people, resources and information as well.

**ICT and a digital option.** Many countries place the Communication and Information Technologies (CIT) high on their development agenda, and rank them among the key determinants of their future urban development. The ease with which one place can be reached from any other place, and the ease with which one individual can reach another, independently of the distance, are already the more common characteristics of contemporary societies, but the development goals as well.

Part of the ICT reality is the World Wide Web. Introduced on a large scale less than two decades ago, it grew rapidly, first into a new communication channel, but very soon into a parallel economic and social space. Today, it constitutes part of the reality that can no longer be ignored, and a place where part of urban and spatial development and management functions take place. "Wiring" the nation and creating the "intelligent nation" are often not the development goals only, but the indicators of progress as well.

The intersection where the technology and the new planning requirements meet create a point where the planning profession stands today. It is the point where many important questions yet to be answered originate. It is also a departure point for creating the new opportunities for the profession. Communication, access and mobility are the cross cutting issues, and it is at this stage that the ICT and e-option in particular, occur in and become so relevant for planning.

### 3 E- BASED PLANNING PARADIGM

Today, there are many e-services in operation, ranging from simple tools for disseminating information and facilitating access and communication, to the most complex forms created and maintained to improve planning and management of cities and regions. Some of these technologies (instruments) have been around since the advent of the Internet. Others have gone mainstream over the last few years. All of them are aimed at using the web networking to enable the geographically distributed users to access databases and computational resources, to provide efficient messaging and data exchange, and facilitate sophisticated real-time communication. In general, introducing the e-based option into the planning procedures, does not necessarily lead to the entirely new paradigms or development models. Rather, they are aimed at providing supplementary means to facilitate and support the existing ones. Web networking is aimed at providing supplementary means to facilitate access to different information resources related to urban development and management, to sustain and foster further development of urban democracy, and to annex the new forms of urban management to the existing ones. Public services and resources thus become closer to their citizens, and different actors participating in the development process are afforded/provided with a new arena for developing dialogue, cooperation, and exchange. The ultimate goal is to construct a more comfortable urban milieu, and a more democratic and fair social environment.

The e-services are amongst the most rapidly growing development sector of today, and the remarkable results in that field have been achieved in many countries world-wide. In more developed countries there are hundreds of thousands of operating modules with different tools in almost every city or region. Some countries, like Italy or Singapore have begun to gradually replace a traditional model of the face-to-face office work by the e-alternative.

How does "wiring" nations and creating the "intelligent environment" affect the way we plan and manage our settlements? Does the planning benefit, do we - the professionals, benefit? Does the public benefit, and is it that an omnipotent tool for working in the network society has been invented?

### 4 ADVANTAGES OF THE ON-LINE WORK

It has been repeatedly emphasised that the e-alternative generates positive effects to all the parties involved, from the individual to the societal level. The benefits are usually summarised as follows:

#### Individual/Citizens

- Offers alternatives
- Enhances public participation in the democratic process
- Enhances social and community life
- Provides instruments for carrying out activities
- Provides access to information and facilities
- Develops new skills and creative thought
- Supports cosmopolitanism and trans-localism
- Extends opportunities to integrate less privileged or otherwise marginalized groups

#### Business/Corporate Sector

- Supports business and economy
- Improves service delivery business-client and business-business
- Creates opportunities to improve delivery at lower costs
- Enables greater efficiency in job performance
- Opens the door to new business opportunities
- Provides opportunities to integrate into regional/international business/economic world

#### Public Sector

- Creates opportunities to government to improve service delivery at lower costs
- Provides potentials to improve quality of local urban management
- Supports efficiency of local governance and the quality of the decision-making process
- Improves quality of communication between local authorities and their citizens, and adds new opportunities for public participation in the community affairs
- Provides a platform for communication and cooperation between different local bodies and departments
- Enables citizens to communicate with their governments in an easier and more efficient way
- Provides citizens with easier access to different information, government departments and bodies, etc.
- Supports democratization and public involvement
- Supports cosmopolitanism and trans-localism and is opening up an opportunity to integrate into regional/international wider framework.

### 5 ON-LINE WORK VIS-À-VIS CRITERIA OF A GOOD PLANNING PRACTICE

A set of the technologies (instruments) chosen for the analysis here are practically all recognised today:

- E-mail
- Web site
- Electronic Listserv / Discussion Group
- Electronic Conferences

- Web-based Audio/ Video Conferences
- Electronic Journal/ Newsletter
- Online Sharing of Documents/Publications
- Online Database of Legislation / Policy
- Web GIS
- Web Portal/Electronic Gateway
- On-line Communities
- On-line Planning Studio
- Content Management System

In evaluating the likelihood of making a shift from a traditional planning technology to the e-based alternative, a number of criteria may be employed. The analysis presented here focuses on the key issues - applicability and accountability, and therefore the technologies (instruments) are analysed against the following:

- The relevance of the communication mode to the planning process;
- Potential of the alternative to be applied throughout the planning process;
- Likelihood of the alternative to meet the quality standards;
- Relationship and ratio between the impacts and availability.

### 5.1 Communication mode and the planning process

While planners have been confronted with a question of communication ever since the advent of their profession, and especially since participation and public involvement become a standard, and a required part of the procedure, it is by introducing the e-based alternative that for the first time they have a communication option they can use efficiently. There are different technologies (instruments) available to provide the service for different stages throughout the whole planning process. Simple data access or data/information exchange can be made even with the simplest tools, and technical requirements for their use are practically minimal. Access to people can be made in the same way. However, it is the most sophisticated technologies (instruments) that have the highest potential to substantially increase the efficiency and effectiveness of planning. They provide the interactive real time communication that can be employed throughout every planning stage, be it a pre-planning survey, plan-making itself, or the decision-making process. However, the technical and know-how requirements for their use are substantial as well.

**Table 1: Communication mode by instrument**

	Exchange	Access Data/ Information	Access People	Interactive Communication	Real Time Communication
E-mail	•		•		
Web site		•			
Electronic Listserv / Discussion Group	•		•	•	
Web-based Audio/ Video Conferences	•		•	•	•
Electronic Journal/ Newsletter		•			
Online Sharing of Documents/Publications		•		(•)	
Online Database of Legislation / Policy		•			
Web GIS		•			
Web Portal/Electronic Gateway	•	•	•	(•)	(•)
On-line Communities	•	•	•	•	(•)
On-line Planning Studio	•	•	•	•	•
Content Management System	•	•	•	•	•

### 5.2 Applicability

Not all technologies (instruments) are equally functional. Some of them may be employed throughout the whole planning process, while others may provide good service only for a part of the process, or serve at a particular stage. The more sophisticated they are, the broader and more extensive, but their application may be intensive as well. As for the perspective of a single use, it is interesting to observe that complexity and refinement of the instrument do not always play a major role. For example, a simple web site is a very useful instrument for many pre-planning activities, and in terms of its performance ranks as equal to the most sophisticated ones. However, it is not the same as for the other procedures. In the plan-making process, decision making, and procedures for monitoring and implementation only the most sophisticated rank as very successful, while the more simple often are of no use. Web GIS, on-line communities and CMS are the most successful and can practically be applied at any stage as superior tools. Technical requirements for their use however are quite high, and many countries and communities, for the time being, can hardly afford them.

**Table 2: Applicability**

	Pre-Planning	Planning Process	Decision Making	Implementation	Monitoring
E-mail	•				
Website	•••	•	••	•	••
Electronic Listserv / Discussion Group	•••	•	•		
Web-based Audio/ Video Conference	•	•			
Electronic Journal/ Newsletter	••	•		•	
Online Sharing of Documents/Publications	••	•	•	•	•
Online Database of Legislation / Policy	••	•	•	•	•
Web GIS	•	•••	•••	••	•••
On-line Planning Studio		•••		•	
Web Portal/ Electronic Gateway	•	••	•	••	•••
On-line Communities	•••	•••	•••	••	•
Content Management System	•	•••	•••	•••	••

Number of dots indicate the level, ranging from applicable (one dot) to very applicable (three dots).

### 5.3 Quality of planning

Quality of planning may be assessed against a number of parameters. However, it is a group of basic principles that every good planning practice relies on, against which the potential of the e-based technologies (instruments) can be evaluated. These parameters are:

- Efficiency (performing in the best possible way and least wasteful manner);
- Effectiveness (capacity for producing a desired result/effect);
- Collaboration/cooperation (capacity for enabling two or more parties to work together effectively);
- Transparency
- Public involvement
- Equity of access

In general, all technologies (instruments) contribute to the quality of planning, and enhance the quality of its performance. Some of them contribute more though in respect to a particular criterion, or a set of criteria. The general rule observed before - the more sophisticated instrument the more effective it is, does not apply always and everywhere. For example, a website ranks as good as some of the most sophisticated ones against the criterion of effectiveness, transparency and to some degree is relevant for public involvement and the equity of access. The fact that even the simplest technologies (instruments) may substantially improve the planning practice is an interesting observation, especially with regard to the often heard argument that financial and technical limitations restrict their use.

The majority of instruments meet the criterion of providing or improving the transparency of the planning process. They may also be used to enhance collaboration and cooperation among the stakeholders in the planning process in general. Some of the instruments are likely to increase the efficiency and effectiveness of planning, while quite a number can be employed to support public involvement and public participation.

**Table 3: Quality of Planning**

	Efficiency	Effectiveness	Collaboration/ cooperation	Transparency	Public Involvement	Equity of Access
E-mail			•			
Website		•	(•)	•	(•)	•
Electronic Listserv / Discussion Group		•	•		•	
Web-based Audio/ Video Conference			•		•	
Electronic Journal/ Newsletter				•		
Online Sharing of Documents/Publications	•		•	•		•
Online Database of Legislation / Policy		•		•		•
Web GIS	•	•	(•)	(•)	(•)	(•)
On-line Planning Studio	•	•	•	(•)	(•)	
Web Portal/ Electronic Gateway	•	•	•	(•)		•
On-line Communities			•	(•)	•	(•)
Content Management System	•	•	•	•	•	•

(•) conditioned

## 6 CHALLENGES TO THE ON-LINE OPTION: IMPACTS VS. AFFORDABILITY

The ICT in general, and some of the technologies (instruments) in particular, require a sophisticated environment in order to be implemented and to work successfully. Some of them can be successful only if a corresponding know-how is secured, or a technical infrastructure developed. The more complex and sophisticated they are the higher the requirements they impose. Only the simplest ones may work in the environment that exist today in the majority of countries.

Discussion and literature on the issues of social deficiencies and problems are limited, however, a digital divide has been recognised and discussed broadly. Recently it was placed on the world agenda: "At first sight, it might appear that new computing and communication technologies offer tantalising possibilities for transcending traditional social and geographical barriers...the reality however, is very different and quite alarming; there is growing evidence that the main trends surrounding the application of CIT support processes and practices that intensify urban polarisation" (GRHS:Habitat+5:2001). The dominant logic of the CIT- based development supports urban polarisation, and tends to extend the reach of the economically and culturally powerful, thus contributing to the restructuring of human settlements (Graham, 2001). The uneven effects of such a process advance the idea of the heterogeneity between privileged and non-privileged territories or social groups (Bakis 1984, Bressand, Distler 1995, Allemand 1996). Therefore, there is a need to include into the course of analysis a number of other issues like accessibility or to address the question of social justice as well. The e-based option may become effective only under the condition that the majority of the population have a secured access to it, and the adequate know-how to use it. Only where there is a critical mass of users who already exists or is likely to emerge, the alternative may become a real option and serve the purpose (Bajic Brkovic, 2001, 2002).

It is necessary therefore to compare the affordability of these technologies (instruments) against the positive and planning related impacts they produce or are likely to produce. The assessment and comparison presented here present an interesting relationship between the two. The more affordable technologies at the same time create fewer or less relevant impacts, while the less affordable apparently are more important from the point of view of the impact creation.

**Table 4: Affordability vs. Impacts**

	Affordability	Impact
E-mail	•••	
Website	•••	•
Electronic Listserv / Discussion Group	••	•
Web-based Audio/ Video Conference	•	•
Electronic Journal/ Newsletter	••	•
Electronic Journal/ Newsletter	••	•
Online Sharing of Documents/Publications	•	•
Online Database of Legislation / Policy	••	•
Web GIS	•	•••
On-line Planning Studio	•	•••
Web Portal/ Electronic Gateway	•	•••
On-line Communities	•	•••
Content Management System	•	•••

Number of dots indicate the level, ranging from fair (one dot) to very high (three dots).

This observation raises an important and interesting question on the perspectives of the e-planning option in different countries, in relation to the level of their development. With no intention to get into discussion on the topic this time, it is worthwhile to mention the results of two recently conveyed surveys on the future of the e-support planning, one conducted in the Caribbean region (M. Frojmovich 2002), and another in Serbia and Montenegro (M. Bajic Brkovic 2003). Although the two entities hardly have anything in common except that both belong to the developing world, the results obtained are quite similar. In both cases, the e-option exists, although on a rudimentary level only. Both in Serbia and in some countries in the Caribbean, the strategy on e-government has been already adopted or is on its way. The implementation has hardly if at all started. Not only is there almost no interest among the professionals to introduce and experiment with a new practice, but the overall attitude is rather skeptical and with a lot of doubting tones. Affordability is the key issue of concern among the respondents, while the lack of adequate infrastructure, a weak know-how and a lack of support from the governments, are among the obstacles most often mentioned.

## 7 CONCLUSION

Would high-tech and high-touch technologies truly replace the traditional way of plan-making and decision making, the way the professionals work and communicate? Would on-line public participation replace community meetings and public hearings? Would the decision-making process take place in cyber place, and is the red tape bureaucracy likely to be replaced by a transparent and ever reaching e-option?



The ICT has gained the momentum and a digital opportunity has been created. A digital option may provide many advantages, it has a potential not only to replace the traditional tools but also to substantially improve professional work by creating added value. While during the first years it was accepted as a medium for communicating and sharing information, today it has moved onto the next generation transforming into a development supporting tool. The option has been admired particularly for the role it plays in supporting businesses, locally and internationally, and as a new economic resource in general. As for its social role, the contribution towards enhancing openness and transparency of local governance, and the development of citizenship and urban democracy, have been amongst those mostly praised.

Taking the overall performance and the assessment criteria used in the analysis presented here, it is evident that the more sophisticated technologies (instruments) create the more relevant impacts, while the simple technologies, the so called "soft instruments" stand important for some aspects of the planning practice. The "soft instruments" may be used to enhance the transparency and democracy of the planning process, or to support the public involvement. Still, their application is rather limited. The more sophisticated ones, on the other hand, are opening up new frontiers thus becoming a real guiding force in transforming the profession.

There are the questioning and doubting tones as well. In addressing the concerns of those who are skeptical, it should be noted that the e-alternative does not necessarily exist to replace the existing and traditional mechanisms of doing things, but it rather offers a more efficient alternative and provides options. In fact, the new technologies offer the opportunity, for the first time, for improved delivery at a reduced cost. Yet, in addressing the pros and cons more attention should be dedicated to the observed challenges, in order to assess the alternative justly, and in a fair way, and to develop ways and means to overcome the shortcomings.

The decision to go on-line though does not rest with the planners only, for they are but one actor in a digital game. Clearly, countries that have already gone on-line provide more opportunities and a shift in the profession is already taking place. In many others, the option either does not yet exist or exists on a rudimentary level and in a very restricted sphere of professional work.

The information and communication technologies and a digital reality in particular are but one segment of the overall reality named the Information Age. Clearly, there are other processes that are as relevant for the profession as they are. In evaluating a perspective for further development of the planning profession, these complement processes have to be carefully observed and their impacts thoughtfully studied.

## 8 REFERENCES

- ALLEMAND, S.: *Nouvelles technologies : mythes et réalités*, Sciences Humaines, N° 59, 1996.
- BAJIC BRKOVIC, M.: E-communication and e-services in urban management: current trends and development perspectives in Yugoslav cities. In: F. Eckard: *The European City in Transition: Consumption and the Post-Industrial City*. Peter Lang: Frankfurt/New York, 2002.
- BAJIC BRKOVIC, M.: The new information and communication technologies: a challenge for urban planning and management. Background paper. *Cities in a Globalizing World: Global Report on Human Settlements 2001*. United Nations Centre for Human Settlements (Habitat), Nairobi, Kenya, New York, USA, 2001.
- BAJIC BRKOVIC, M.: Digital democracy: towards more transparent urban planning and management? Proceedings International Society of City and Regional Planners XXXVI Congress. Cancun, Mexico, 2000.
- BAJIC BRKOVIC, M.: Digital City: new communication and information technologies in urban planning and management. In: M. Bajic Brkovic (ed.), *Sustainability and the City*. University of Belgrade, Belgrade, 1999.
- BAJIC BRKOVIC, M.: Civic networks in contemporary urbanism: the Italian and Yugoslav experiences. *Infoscience 1/99*, Belgrade, Yugoslavia, 1999.
- BAKIS, H. et al: *Information et organisation spatiale*. Caen: Paradigme, 1984.
- BRESSAND, A., DISTLER, C.: *La planète relationnelle*. Flammarion, 1995.
- CREECH, et al: *Strategic Intentions: Managing Knowledge Networks for Sustainable Development*. International institute for Sustainable Development. Winnipeg, Canada, 2001.
- FIDELMAN M.: *Telecommunication Strategies for Local Government- A Practical Guide*". Government Technology Press: <http://civic.net/telecom/handbook/toc.html>, 1997.
- GRAHAM, M.: Use of information and communication technologies in IDRC projects: lessons learned. International Development Research Centre. Ottawa, Canada, 1997.
- GRAHAM, S.: Bridging urban digital divide? Urban polarization and information and communication technologies. Background paper. *Cities in a Globalizing World: Global Report on Human Settlements 2001*. United Nations Centre for Human Settlements (Habitat), Nairobi, Kenya, New York, USA, 2001.
- ISOCARP: *Honey, I Shrank the Space: Planning in the Information Age*. Conference Proceedings. 37th International ISOCaRP Congress, Netherlands, 2001.
- HILBERT, M.: Latin America on its path into the digital age: where are we? ECLAC, United Nations Publication LC/L. 1555-P, Santiago, Chile, 2001.
- KLUZER, S., FARINELLI, M.: A Survey of European cities' Presence on the Internet. Working Paper No. 31, March 1997. Databank Consulting, Milan, Italy, 1997.
- SERGI, G., BAJIC BRKOVIC, M.: Civic Web Networks in central Italy: case studies of Modena, Ravenna, Pesaro and Ancona, SPATIUM no.8, IAUS, Belgrade, Yugoslavia, 2002.
- STEINS, C.: The top 10 technologies for urban planning. American Planning Association (APA) Planning Magazine, 2002.
- UN-HABITAT: *Cities in a Globalizing World: Global Report on Human Settlements 200*. United Nations Centre for Human Settlements (Habitat), 2001.
- VAN DEN BERG, M.: State of the Profession 2003. IsoCaRP World Congress 2003, Cairo, 2003.

## 9 ACKNOWLEDGEMENTS

The paper is part of the project: CIT in Urban Planning and Management in Trinidad and Tobago. Research project leader: Professor Milica Bajic Brkovic, BPTT Chair in Planning and Development. The University of The West Indies, Faculty of Engineering, Programme in Planning and Development. Research grant awarded by The University of the West Indies, School for Graduate Studies and Research for Research & Publication. Trinidad and Tobago. 2002-2003.