



4TH MEETING OF THE EUROPEAN 3D GEOMODELLING COMMUNITY

*A ROLE TO PLAY FOR GSOs IN URBAN
INFORMATION PLATFORMS ?*

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BRGM - Digital Infrastructures and Services

*Orléans - France
23rd February 2018*

What about smart cities and smart regions ?

III Smart Cities

ÉCONOMIE

SMART CITIES

Energie

Les prix de l'innovation

Habitat

Mobilité

Participatif

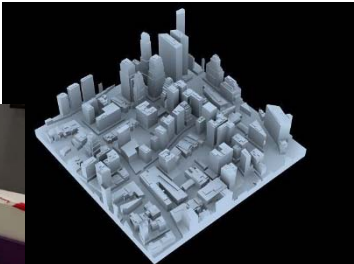
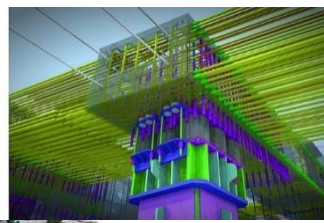
L'Ile-de-France ambitionne de devenir une « smart région »

La présidente de la région capitale lance un programme pour accélérer le déploiement de la fibre optique en tout point du territoire francilien. Et pour mettre en place une **plate-forme de données 3D**, afin de diffuser en open data les données régionales et ainsi susciter de nouveaux « services intelligents ».

LE MONDE | 21.11.2017 à 09h27 |

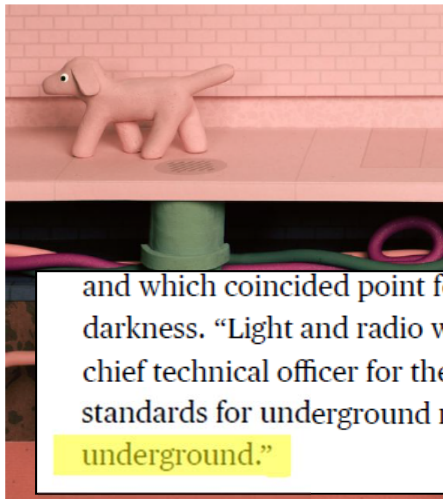
**Our infrastructures and cities are
not laying on flying carpets**





Nobody Knows What Lies Beneath New York City

Subterranean cartographers are bringing to light the dark, tangled truths buried under the streets.



2017

Nobody Knows What Lies Beneath New York City - Bloomberg

power grid. He consulted some flood projection maps the Federal Emergency Management Agency had prepared. Then he stared at a map of the grid maintained by Consolidated Edison Inc., the region's power supplier. And it just jumped out at him: **The substation at East 13th Street, on the banks of the East River, was smack in the middle of a flood zone.**

and which coincided point for point with it." But the world beneath our feet remains shrouded in darkness. "Light and radio waves don't go through dirt like they do air," says George Percivall, chief technical officer for the Open Geospatial Consortium, which is helping to develop global standards for underground mapping. **"The next frontier, in both a literal and figurative sense, is underground."**

ILLUSTRATION: HUDSON CHRISTIE

Bv Gred Milner

sign of how dangerous it is to miscalculate and rupture a gas line. Still, mistakes are common and inevitable. **Strikes on underground infrastructure cost the city an estimated \$300 million every year.**

Eole : incident de chantier, RER A paralysé

+ Suivre ★ Favoris 0 Commentaires

PARTAGER f t in &



Près de la Porte Maillot, l'entreprise chargée des travaux de prolongement d'Eole (RER E) a heurté lundi matin lors d'un sondage le tunnel du RER A. D'où une brèche d'une quinzaine de centimètres de diamètre dans la voûte du RER A, inondant les voies de ce RER exploité par la RATP. C'est-à-dire la ligne ferroviaire la plus fréquentée d'Europe



Key challenges for smart / sustainable / resilient cities and infrastructures dependent of subsurface knowledge

Geo-Hazards : ground stability, subsidence, earthquake, flooding

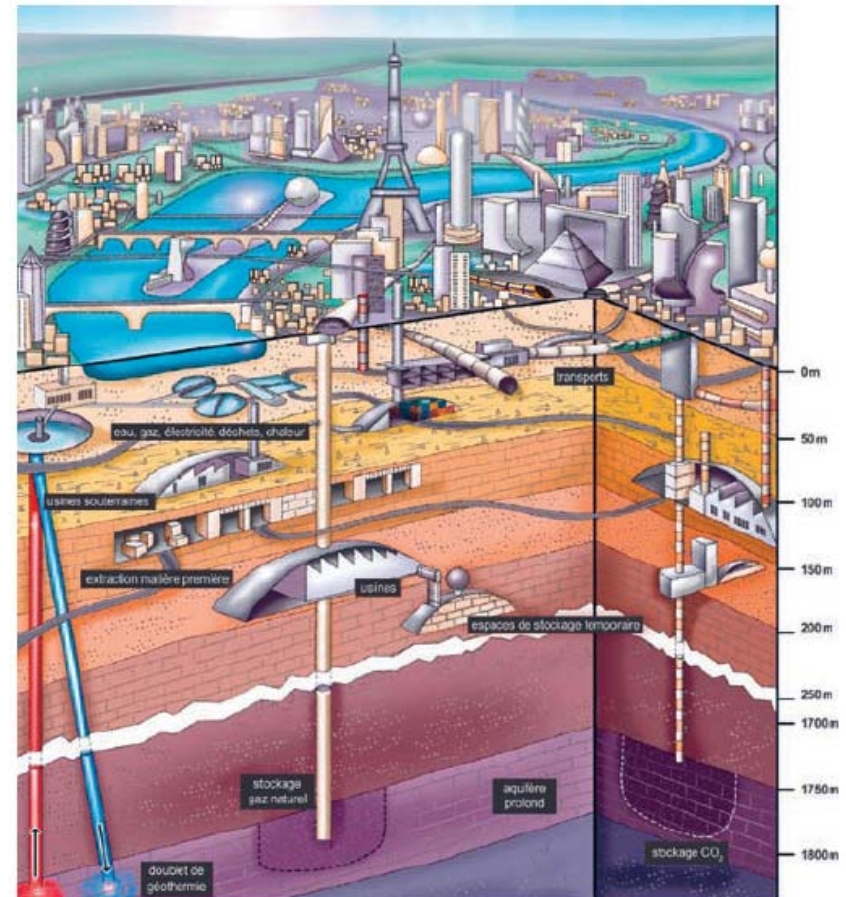
Resources / services : water, geothermal energy, energy storage, building materials

Remediation of polluted soils, urban wastelands

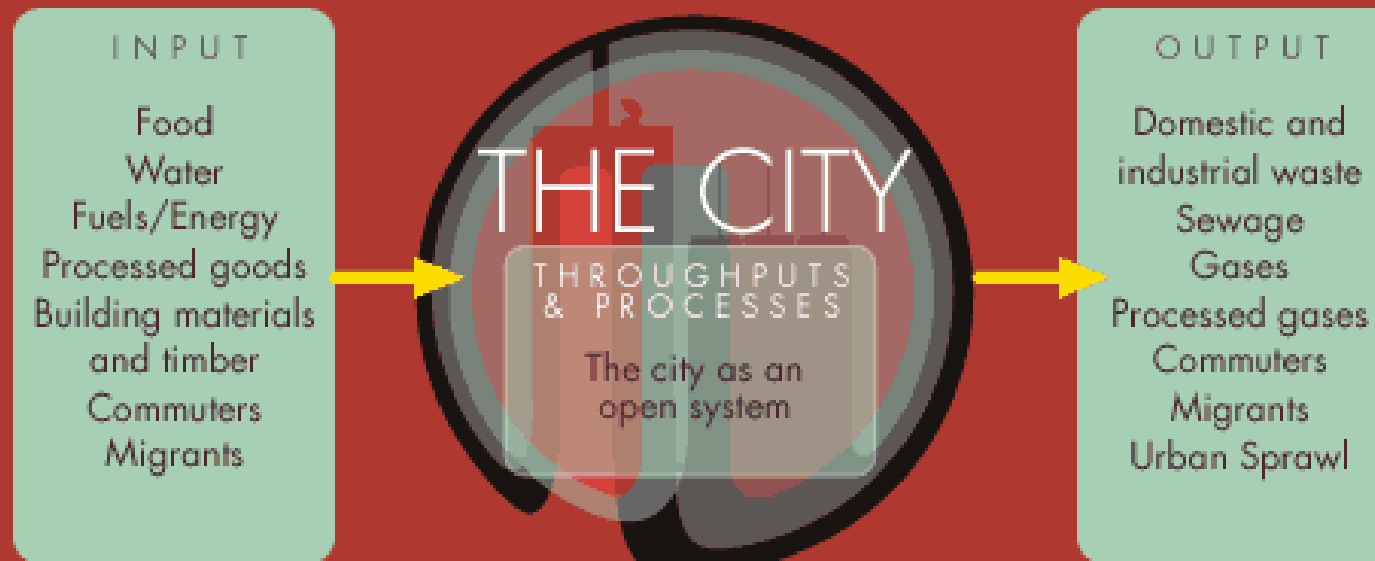
...

In the context of climate change and energy transition and of increasing conflict of usage of the underground

- *We need an holistic modelling of cities that integrates the subsurface (and the other components of the natural environment as air, water, biodiversity)*
- *“City system” (analogy of “earth system”)*
- *Geological surveys, environmental agencies are information providers and data custodians*

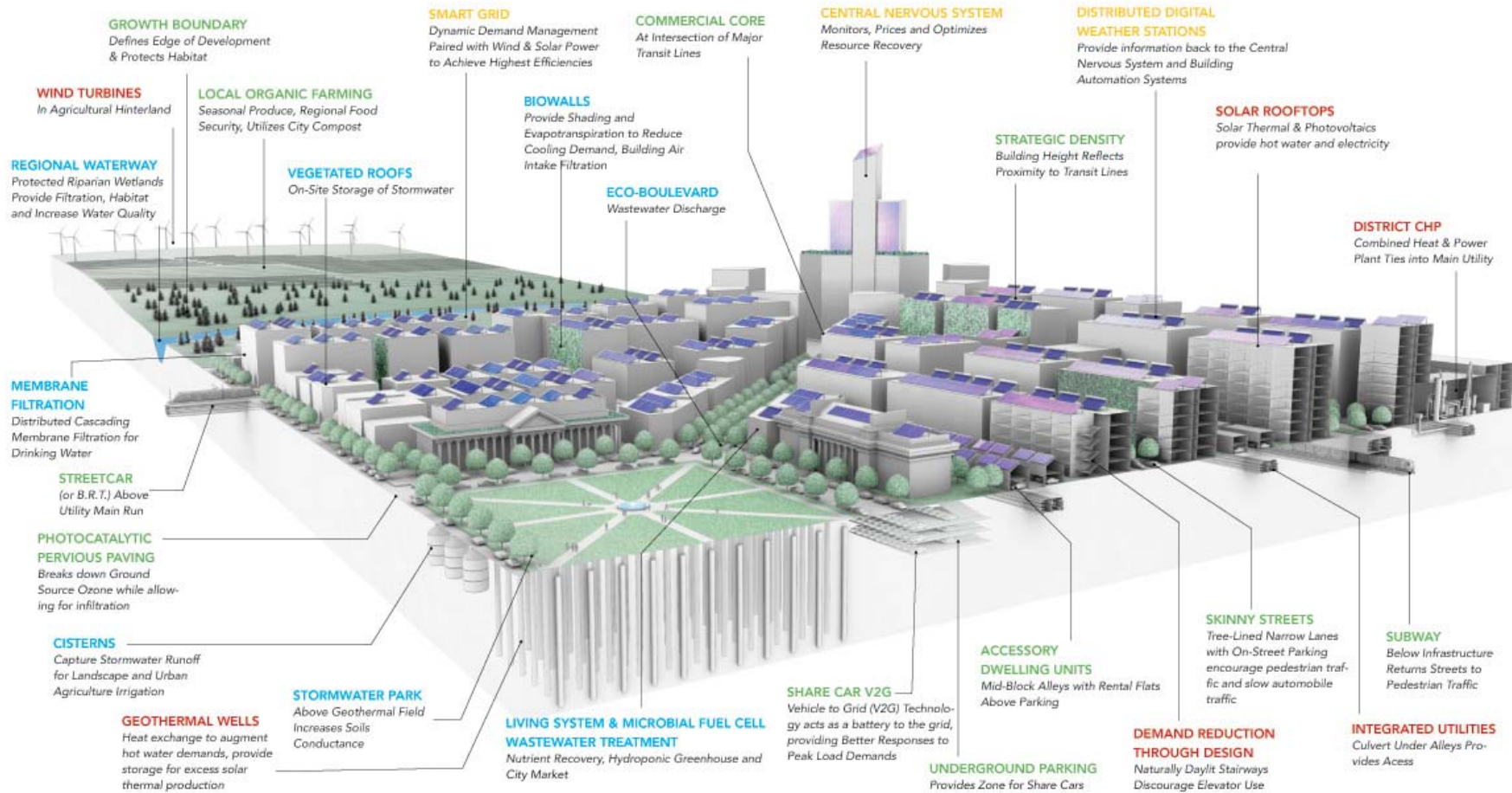


The city as an open system



PORTRAIT OF THE LIVING CITY

INFORMATION SYSTEM: Central Nervous System (top right quadrant)
 LAND USE AND MOBILITY SYSTEM: Skinny Streets (bottom right quadrant)
 ENERGY SYSTEM: Geothermal Park (top left quadrant)
 WATER SYSTEM: Microbial Fuel Cell Wastewater Treatment (bottom left quadrant)



<http://www.mccormick.northwestern.edu/magazine/images/spring-2016/living-city-header.jpg>

Why is it difficult to merge modelling of built environment and “geology” ?

	Built environment	“Geology”
Modelling process	Complete design by human	Progressive exploration, and understanding (increasing complexity)
Data acquisition	Relatively cheap (Lidar...)	Expensive and “indirect”
Modelling tools	CAD engineering software	“geomodellers” (interpolation algorithms)
Standards	BIM CityGML	For 2d : GeoSciML For 3D ???
Accuracy / uncertainty	Usually well known (design – construction)	Difficult to estimate, communicate, and represent
Visualisation	VR tools for general public	“for experts only”
People	Engineers	Natural scientists

We have (will have) national / EU : international thematic platforms providing 3D geology



EGDI



EPOS



OneGeology

... is it the answer ?

What do « they » mean by platform ?

- <http://www.boostaerospace.com>

The screenshot shows the BoostAeroSpace website. The header includes the Boost Aerospace logo, social media icons for LinkedIn, Twitter, YouTube, and RSS, a search bar, and a navigation menu with links for Home, AirSupply, AirCollab, AirDesign, Security, News, About us (highlighted), and Contact. A breadcrumb trail indicates 'You are here : > Accueil > About us'. The main heading is 'About us'. The text describes BoostAeroSpace as a platform for the global Aerospace and Defense community, providing secure Business Solutions for collaboration between Customers, Suppliers, and Partners. It lists three SaaS solutions: AirSupply (Logistics Collaboration Processes), AirCollab (Cross-company Collaboration Workspace), and AirDesign (Technical Data Exchange). Below this is a 'our services' section with a navigation bar for AirSupply, AirCollab, AirDesign, and Customers. The statistics are: 22 Major players, 1500 Industrial partners, and 11000 Individual users. The footer contains 'BRGM FRENCH GEOLOGICAL S' and 'BoostAeroSpace Business Value'.

Boost AEROSPACE

Home AirSupply AirCollab AirDesign Security News **About us** Contact

You are here : > Accueil > About us

About us

BoostAeroSpace was built to serve the unique demands of the global Aerospace and Defense community. BoostAeroSpace provides secure Business Solutions that improve the collaboration between Customers, Suppliers and Partners using standardised processes.

Three solutions are provided in Software as a Service (SaaS) Mode: **AirSupply** (Logistics Collaboration Processes), **AirCollab** (Cross-company Collaboration Workspace), **AirDesign** (Technical Data Exchange).

our services

AirSupply	AirCollab	AirDesign	Customers
22	1500	11000	
Major players	Industrial partners	Individual users	

BRGM FRENCH GEOLOGICAL S

Services Business Value BoostAeroSpace Business Value

Dassault Systems – 3DEXPERIENCE City

<https://www.3dexperiancity.com/>

(owner of former Gemcom software suite : Surpac...)



CITY DOMAINS

Discover how 3DEXPERIENCE City brings value to all the domains of a city.

MOBILITY

UTILITIES

HEALTH & SOCIAL SERVICES

SECURITY & PUBLIC SAFETY

ENVIRONMENT & PLANNING

FACILITIES & MANAGEMENT

EDUCATION & CULTURE

ECONOMY

E-GOVERNMENT

Facilities & Management

Actors:

Building Inspectors, Regulatory Agencies, Building Owners/Operators, Engineering, Procurement, and Construction Managers, Architects, Analytic/Engineering Service Providers

“ 3DEXPERIENCE City® is a 3D collaborative environment that federates all city data from sensors and systems. Officials use it as a ‘cockpit’ to analyze and manage city services and resources, as well as to virtually simulate ‘what if’ scenarios to optimize domains such as infrastructure, logistics and security.”

How can officials, business people and citizens work together to improve cities? The answer is...
3DEXPERIENCE City®.

3DEXPERIENCE City is a 3D collaborative environment where data from sensors and city systems is federated into a virtual referential that benefits everyone.

- Officials - 3DEXPERIENCE City offers advanced modeling technology to simulate ‘what if’ scenarios to test concepts and develop optimal solutions in city domains ranging from mobility and health to utilities and planning.
- Business - 3DEXPERIENCE City acts as virtual marketplace where people can offer goods and services.
- Citizens - 3DEXPERIENCE City is a community space that serves as a collaborative hub, conversation forum and information portal.

3DEXPERIENCE City® is powered by Dassault Systèmes 3DEXPERIENCE® platform, the business experience platform that world-leading companies in every industry use to create winning customer experiences.

If / when it happens, who will build / operate / control urban data platforms ?

- a 100% public agency ?
- a 100% private company ?
 - a GAFA / IT company (ESRI, Dassault, IBM,...)?
 - an engineering or utility company ?
 - ...
- a public/private partnership ?

→ *A new debate (specially in Europe) about the need to guarantee access to data necessary for public policy making (“public good”)*

→ *For the benefit of the citizen... and tax payer...*

Do we (GSOs) want to be part of the game ?

INTERESTS OF THE PARTIES IN A MULTITIER PARTNERSHIP FOR URBAN PLATFORMS

Party	Role	Contributes	Benefits
State / ministry		Legal framework	Optimal use of public goods
Local authority	Owner	Implements obligations to collect data in contracts with private / public contractors	Optimise costs Reduce risks Better planning
Engineering / drilling company	Data "creator"	Provides data in appropriate format	Access to data from all parties No need to archive its data
Constructing company / operator of infrastructure	User	Provides data in appropriate format	Access to data along life of construction / exploitation
IT infrastructure provider (public / private)	IT operator	Provides secure and trusted access to services	Long terme contracts
Software provider	Tech provider	Tools for data management and processing	Long term contracts
Innovation labs	Innovator	Creation of added value products	Integration in ecosystem
Geological survey	Trusted party for geology (sl)	Provides reference rules « Archivess » / harmonize data	Collects maximum of information Develop services

The MINnD initiative in France to create the foundations of such a platform

Projet National MINnD

Interoperable Information Model for Sustainable Infrastructures

MⁿD National research project MINⁿD

Interoperable Information Model for Sustainable Infrastructures

www.minnd.fr

Program Results + Partners + Publications +

News

the construction industry which must
 e project complexity, the eco-design
 ctors (PPP, Concessions), the obligation to
 istribution) or the development of BIM
 e records, files have shown their limits. The
 e finest information by establishing a
 ognized internationally) and adapted tools,
 s tools developed internally by each actor.
 s structured around five themes.

s of representation and evolution
 nment

partner in...

BRGM FRENCH GEOLOGICAL SURVEY WWW.BR

Control and share information

✓ Improve productivity and competitiveness

✓ Platform to manage information sharing and thus enabling:

- collaboration between several sites and skills,
- concurring engineering,
- life cycle analysis,
- all digital engineering activities,
- communication with public and third parties.

MINnD

<http://www.minnd.fr/en/>



Modélisation des Informations Interopérables
pour les Infrastructures Durables

- Interoperable Information Model for Sustainable Infrastructures
- A French consortium of 67 partners
- 1 goal : enhancing BIM capabilities for infrastructure modeling **and management (complete lifecycle of infrastructures)**



We must address the needs of smart cities and large infrastructures

- Deliver data / information / knowledge / products of shallow subsurface for the “city system”
- To make possible the real **integration** of “geology” with city models for simulations, big data...
- In **partnership** with municipalities / engineering and utilities companies / ...
- Through a **legal framework** compliant with the “business models” and interests of the parties
- Through agreed (new) **standards**
 - for 3D geology (new OGC group !)
 - “interoperable” with BIM standards (Building Information Modelling)



Join us next month in Orléans (again...) for the OGC meeting with dedicated working groups (Geoscience DWG and others...)

106TH OGC TECHNICAL COMMITTEE

Centre de Conférence d'Orléans Val de Loire
Orleans, France

19-23 March, 2018

#OGC18FR

Come and join us for the 106th OGC Technical Committee meeting. Hosted by BRGM and ATOS. This will be an amazing week with a broad range of meetings and topics being discussed. You don't have to be an OGC member to attend an OGC meeting. Whilst some meetings will be member only, many are open to anyone to attend and new voices are always welcome.

<http://www.ogcmeet.org/>



Staatliche
Geologische
Dienste
Deutschlands



4TH MEETING OF THE EUROPEAN 3D GEOMODELLING COMMUNITY

Thank you
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Orléans - France
February 2018, 21-23

