



**HARMONISE – Holistic Approach to Resilience and Systematic ActiOns to Make Large Scale UrbaN Build Infrastructure SEcure**

**Project Periodic Report  
Period 1 – Publishable Summary**

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Instrument: Collaborative project, Capability project: Security

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<b>Lead by:</b>	Future Analytics Consulting (FAC)
<b>Prepared by:</b>	Future Analytics Consulting (FAC)
<b>Reviewed by:</b>	
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**SUMMARY:**

This document reports on the progress of the HARMONISE project during the Period M1-M18 (June 2013 – November 2014), including key results, deliverables, dissemination, and managerial aspects across the seven Work Packages and associated tasks.

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# 1 Summary Description of the HARMONISE Project Context and Objectives

The urban environment is becoming more and more complex, not least with regard to security aspects following a decade of continuous threats to our existing and planned large scale urban built infrastructure. Such infrastructure are critical nodes within the intertwined networks of these urban areas, which include not only physical components, but also integrated hardware and software aspects. To date, a comprehensive and holistic (systematic) approach to improve the resilience and security of large scale urban developments against attacks and disruptions has not been developed thoroughly.

The general aim of HARMONISE - A Holistic Approach to Resilience and Systematic Actions to Make Large Scale Built Infrastructure Secure - is to develop a comprehensive, multi-faceted, yet mutually reinforcing concept for the enhanced security, resilience and sustainability of urban infrastructure and development. HARMONISE will result in resilience enhancement methods for large scale urban built infrastructure. It will see the development of a concept to improve the security and resilience of this infrastructure, encompassing the design and planning phases of such projects (and thereby leading to robust built infrastructure invulnerable to natural/man-made disasters). HARMONISE will improve the design and planning of urban areas, thereby increasing their security and resilience to new threats.

Specifically HARMONISE seeks to deliver:

- a) A holistic and interactive online HARMONISE Platform;
- b) A suite of innovative tools (toolkit hosted within the HARMONISE platform) for decision support;
- c) Greater understanding and awareness of urban security and resilience vis-a-vis dissemination activities; and,
- d) Commercialisation and employment opportunities among emerging new markets in this field.

The HARMONISE concept will be applied across a number of European cities through the use of case studies for validation and refinement.

## 2 Summary of Work Performed during Period 1

### *Specific achieved objectives for period 1 (M1 - M18)*

#### **WP1 – Towards an Understanding of Urban Security and Resilience**

- 1) Established an in-depth understanding of the current role and position of resilience in urban built infrastructure as a distinct feature of the urban environment and develop a clear notion of the current SOTA from a multi-disciplinary perspective.
- 2) Harnessed the embedded knowledge of key stakeholders and informants.
- 3) Clearly defined existing gaps between the current practise and the SOTA.
- 4) Defined key actions required to advance the SOTA, paving the way for an integrated, holistic concept formulation.

Specific Achievements:

- D1.1 Thematic findings report on state of current practice and SOTA.
- D1.2 Stakeholder consultation report.
- D1.3 Action plan report on strategies and practice beyond the SOTA.

#### **WP2 – Development of a Shared Holistic Concept for Greater Urban Security and Resilience**

- 1) To commence development of an integrated, holistic concept for resilience enhancement of urban built infrastructure.
- 2) To commence development of a robust data rich repository for the collation and operationalisation of the material sourced in WP1.
- 3) Developed an effective shared workspace for the development of the toolkit and case studies in WP3 and WP4 respectively.
- 4) Develop the repository and workspace into an effective operable interactive portal for resilience planning, testing and management.

Specific Achievements:

- The **Thematic Framework** (UoW, FAC) was established. This is an overall planning and categorising guideline for platform structuring that describes themes, categories, packages and sources of information on urban resilience. The first version of the Thematic Framework was finished in February 2014, and it explained what content needs to be produced and published in the HARMONISE platform, illustrated how different pieces of information are linked together and described a four-phase resilience cycle to which the categories of information relate. Therefore, the thematic framework provides a stronger focus for the platform and a shared understanding of security-driven urban resilience in the HARMONISE consortium. The thematic frameworks will be used as a gateway through which the users will enter the HARMONISE platform. It will also facilitate creating the HARMONISE ontology that defines relevant domain specific concepts and categories in a machine-understandable way
- First version of the HARMONISE platform was released to partners in April 2014 (MS3).
- Technical specifications and protocols for the semantic layer were introduced in April 2014 (MS4).
- Beta version of the platform including semantic search and metadata enrichment services were

launched in early December 2014 (MS5).

### **WP3 – Formulation of Mechanisms/Tools for Delivery of Improved Urban Security and Resilience**

- Undertook SOTA analysis on existing tools for urban resilience enhancement and identified the elements of SOTA which can be specified into useable integrated tools
- Carried out a GAP analysis of these existing tools to identify where SOTA can be advanced by the introduction of an integrated tool or tools .
- Identification of challenges faced in integrating existing and new tools into a holistic toolkit
- Development of a BETA version of new tools based on Gap analysis from WP1 and T3.2. (on going) These tools are as follows:
  - Planning and Design Guidance for Large Scale Urban Built Infrastructure;
  - RESEC - Workbook of Economic Evaluation of Security Investments in Large Scale Urban Built Infrastructure
  - Crowd monitoring, Flow analysis and Security supervision system
  - Multi-building integrator
  - Risk Assessment Tool
  - Human Damage Mapping Methodologies
  - Participatory scenario building in creating resilient city – A workbook of a foresight process
  - Educational Tool
- Interconnection strategy between new developed tools.

(on going)

### **WP4 – Case Study Application and Scenario Modelling**

- 1) Providing an in depth analysis of the resilience context of the case study areas to inform the SOTA and help specify the tool development in WP3.
- 2) Confirming 5 case studies so that the H-ISIP and the full range of HARMONISE tools can be applied on a trial basis within T4.3.

Specific Achievements:

- Within T4.2, initial stakeholder meetings in each of the case study cities (Dublin, Bilbao, Genoa, London and Helsinki) have been arranged, organised and/or held. As part of these meetings, the HARMONISE project was introduced or re-introduced to stakeholders, with case study leads seeking to establish the resilience context of each area (utilising interview templates). This process has also involved matching three HARMONISE tools (currently in development) to each case study area. These steps seek to ensure that the HARMONISE platform and tools can be deployed effectively in T4.3 (due to commence in December 2014)

### **WP5 – Evaluation & Adaptation of Implementation Methods and Integration Process**

From a logical and temporal point of view WP5 is divided in two distinct phases: the first one dedicated to the analysis of the resilience context of case study areas and the definition of an evaluation framework, the second one aimed at applying the evaluation to the case studies being tested under WP4 in order to provide an evidence based for refinement and adaptation of the H-ISIP and toolkit, and therefore deliver

their optimised final versions.

During the Period 1 the first phase has been addressed through the elaboration of Task 5.2 and Task 5.3, which have led to the achievement of the following objectives:

- Definition of the evaluation framework to collect end users feedback about the HARMONISE platform and tools;

Definition of a method to compare the results from the case study areas and generalise them in order to understand the impact of different transnational contexts on the application of the platform and the tools and assess the extent to which the approaches are replicable across different European cities.

Specific Achievements:

- Task 5.2: Outline of the evaluation framework to collect end-users feedback about HARMONISE platform and tools being tested in the case study areas.
- Task 5.3: Deliverable D5.1 – “Method to compare results” (at M18 - November 2014).
- Task 5.3: Milestone MS10 – “Method to compare results” (at M18 - November 2014).

#### **WP6 – Dissemination & Communication, Education/Training & Exploitation**

- 1) Dissemination of project and non-confidential results – This is outlined in greater detail in Annex 2

#### **WP7 – Project/Consortium Management and Coordination during Period 1**

- Organisation and implementation of the HARMONISE project from inception to completion. WP7 is concerned with ensuring efficient administration, procedural and financial management of the project. Key elements of the WP include - Project management activities such as monitoring cost and progress (including monitoring deliverables and milestones); monitoring quality (e.g. overall review of deliverables, reports, organising internal and external review meetings); monitoring of risks; maintaining activity lists; organising consortium meetings and the submission of all deliverables to REA satisfaction.

A list of HARMONISE consortium meetings held during Period 1 is provided below.

<b>Project Meetings</b>	<b>Dates</b>	<b>Venue</b>
HARMONISE Kick-Off-Meeting	26-27 June 2013	Dublin
GA Meeting	7-9 October 2013	London
WP2 / WP3 Sub-Meeting	28-29 January 2014	Rome
GA Meeting	25-26 March 2014	Genoa
WP3 / WP4 Sub-Meeting	15-16 May 2014	Manchester
GA Meeting	16-17 September 2014	Helsinki

### 3 The expected final results and their potential impact and use

Upon its completion, it is intended that HARMONISE will:

- Provide a holistic security and resilience concept for a combination of complex and dynamic urban systems (vis-a-vis the HARMONISE Interactive Semantic Intelligence Platform);
- Deliver supporting tools (hosted within the platform) for the design, planning and operation of large scale urban built infrastructure, tested/enhanced through quality case studies;
- Provide an integrated approach to sharing building infrastructure and security information (building operation systems traditionally work in isolation) including critical flows of materials/energy and sensor technologies etc, while recognising the important role of security culture and societal acceptance aspects;
- Advocate and promote a significant exploitation programme to capitalise on new market opportunities, enhancing the pool of European expertise and fully supported by a comprehensive education/training curriculum; and, ultimately,
- Improve the design of urban areas and systems, increasing their security against, and resilience to, new threats.

HARMONISE will contribute significantly to building up the necessary capabilities for safeguarding security within urban decision making processes by delivering the required technologies and holistic concept approach for knowledge growth in support of these capabilities. HARMONISE will also address a combination of socio-economic and governance frameworks which underpin security at a wider level, ensuring a broad applicability, regardless of the economic or socio-political backdrop.

Beneficiaries of the HARMONISE project include, though are not limited to:

- National and local government authorities who have formal responsibility for delivering safer, more resilient urban built infrastructure;
- Utility companies and other businesses that build, operate, maintain and use a vast range of public/private buildings and infrastructure;
- A range of manufacturing, construction, engineering, and design organisations that provide components and services during the planning, design, construction, operation and maintenance of urban built infrastructure; and,
- The social and business communities who depend on urban built infrastructure for important work, recreation and service functions essential to their daily lives.

In addition, HARMONISE has clear benefits for societal well-being in the creation of resilient urban built infrastructure combining enhanced security and sustainability attributes which can, if (re)designed appropriately, contribute to enhanced quality of life and a safer and more secure public realm for those living in, working in or visiting urban areas. HARMONISE can provide a framework for maximising the application of smart building technologies both at a European level and globally. Furthermore, it will bring about positive economic impacts, through for instance, increased confidence in built assets and confidence that increased protection of critical lifelines will induce and also through the promotion of innovation and co-ordination amongst business with interests in security, resilience or other aspect of urban built infrastructure. The project has the potential to shape and enhance the effectiveness (and cost) of urban security measures and thus the (financial) viability of integrated urban resilience strategies. Specifically, it could contribute to reducing the cost of resiliency measures

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currently deployed in the built environment. This may occur, for example, through the facilitation of better decision-making which will ensure measures can be deployed at the appropriate time within the building cycle, or through the integration of counter-terrorism measures with environmental building techniques - creating a dual-use, and hence a more cost-effective solution.

## 4 Address of the Public Website

Development of the Project website
<ul style="list-style-type: none"><li>The project web site is at: <a href="http://harmonise.eu/">http://harmonise.eu/</a></li></ul>

## 5 Project planning and status – GANTT chart

The GANTT chart depicted in Annex 1 demonstrates the duration of Work Packages and Tasks between M1-M36, together with the delivery dates of deliverables and milestones.

It illustrates the amended timelines of a number of tasks, deliverables and milestones within WP4, WP5 and WP6 as follows (as agreed with the Project Officer over the course of the project):

WP	Task	Original Task Duration	Amended Task Duration	Deliverables	Original Deliverable Date	Amended Deliverable Date	Milestones	Original Milestone Date	Amended Milestone Date
4	4.1	M17–M27	<b>M13 – M18</b>	N/A	N/A	N/A	N/A	N/A	N/A
	4.2	M17-M18	<b>M13-M18</b>	N/A	N/A	N/A	N/A	N/A	N/A
5	5.1	M22-M31	<b>M14-M31</b>	<b>D5.1</b>	<b>M23</b>	<b>M18</b>	<b>MS10</b>	<b>M23</b>	<b>M18</b>
	5.2	M22-M25	<b>M14-M18</b>	N/A	N/A	N/A	N/A	N/A	N/A
	5.3	M22-M25	<b>M14-M18</b>	N/A	N/A	N/A	N/A	N/A	N/A
6	6.1	M21-M36	<b>M15-M36</b>	N/A	N/A	N/A	N/A	N/A	N/A
	6.2	M30-M36	<b>M15-M36</b>	N/A	N/A	N/A	<b>MS15</b>	<b>M24</b>	<b>M20</b>
	6.3	M23-M36	<b>M18-M36</b>	N/A	N/A	N/A	N/A	N/A	N/A
	6.4	M23-M36	<b>M18-M36</b>	N/A	N/A	N/A	<b>MS18</b>	<b>M32</b>	<b>M29</b>

**PLEASE SEE ANNEX 1**



## **Annex 2 – HARMONISE Dissemination during Period 1**

This section outlines HARMONISE project promotion effort during Period 1 (M1 – M18). Such activity is led by WP6 - Dissemination & Communication, Education/Training & Exploitation. WP6 commenced in M15 and will run through to M36 and the completion of the project.

### ***Consortium Participation in Conferences and Events to present first results:***

- German Council on Crime Prevention (European experts in prevention) EU-Projekt HARMONISE – Sicherheit durch Resilienz städtischer Infrastrukturen and European Society of Criminology (Criminologists and authorities in crime prevention) Resilience research in criminology – current approaches, opportunities and the risk of misspecification
- Base London event - 26.06.14 – Full presentation; panel discussion on Holistic Approach to resilience and article in the event guide.
- Oral presentation, Base London Conference - June 2014.
- Preparation of written piece for the Base London Conference, London.
- Presentation of paper at Future Security, Berlin.
- IBMS Middle East Seminars: COBA Middle East Dubai – Doha – Salmiyah - Amman
- Smart Cities Summit: Fleming Gulf Doha.
- Smart City Exhibition 2014 - (Bologna 24th Oct 2014) Organization and participation to the thematic lab “City Operating System - a technological platform for a smart city”. Main topics: Urban resilience and Genoa Living Lab (Genoa-Marassi case study)
- Presentations regarding HARMONISE at DPT - DEUTSCHER PRÄVENTIONSTAG and EUROCRIM 2014.
- Risk tolerance and resilience of the Finnish society: Scientific Advisory Board for Defence, Tampere, Finland 23rd Oct 2014. 50 high-level participants from Ministry of Defence, National Defence Forces, universities, Finnish Safety and Chemicals Agency and companies.
- FinnBuild 2014: Finnexpo Helsinki, Automation & Security, introducing essentials of HARMONISE.
- Participation on the German Committee on Disaster Prevention & Disaster Management to present the results of 1st stakeholder consultation.
- Presented at Conference on Disaster Prevention & Disaster Management: Promoting resilience in civil protection - Results from an expert survey.

### ***Preparation of various articles:***

- Lukas, Tim: Sicherheit in der Stadt - Urbane Resilienz als Paradigma der städtebaulichen Kriminalprävention? In: Hoch, H. / Zoche, P. (Hrsg.), Sicherheiten und Unsicherheiten. Soziologische Beiträge. Münster, LIT, 2014, S. 91-110.

- Lukas, Tim: Urbane Resilienz. Ein neues Paradigma in der städtebaulichen Kriminalprävention? In: SIAK Journal, 1, 2014, S. 4-15.
- Lukas, Tim: The Governace of Crime in the Risk Society. From "Designing Out Crime" to "Built-In Resilience". In: Palidda, S. (Ed.): Ignored Securities. Rethinking the Governance of Security, London, Ashgate, 2014 (in progress).
- Future Security Conference Paper: The drive for holistic urban resilience

A short overview of some of these outputs is provided in the sections below. All dissemination material referred to below can be found in the 'Publications' section of the HARMONISE website – [www.harmonise.eu](http://www.harmonise.eu)

## 1.0 BASE London Conference; London, 26<sup>th</sup> June 2014

Dr. William Hynes (HARMONISE Coordinator; Future Analytics Consulting) presents preliminary findings of the project to the BASE London Conference 2014. This presentation is available to view on YouTube – <https://www.youtube.com/watch?v=86LsuRxPD0U>



The image shows a collage of promotional materials for the BASE London Conference. On the left is a vertical poster for the 'EVENT GUIDE' on 26.06.14 at Guildhall, London, featuring a sunset over the London skyline with the Tower Bridge and an airplane. On the right is a video player showing Dr. William Hynes speaking at a podium. Below these are two articles from the event guide. The first article, 'UNDERSTANDING THE RISK AND OPPORTUNITY LANDSCAPE', features Dr. William Hynes and Richenda Connell. The second article, 'TALKING HEADS' by Keith Clarke, discusses carbon mitigation measures and urban resilience.

**EVENT GUIDE**  
26.06.14 - GUILDHALL, LONDON

**BASE LONDON**  
BUILDING A BETTER LONDON

**UNDERSTANDING THE RISK AND OPPORTUNITY LANDSCAPE**

**Dr William Hynes, director, Future Analytics Consulting**  
William Hynes is a Chartered Urban Planner, a Chartered Surveyor, and a founder and director of Future Analytics Consulting. William has successfully won seven European Union (EU) 7th Framework Research and Technology Development (RTD) projects in the areas of urban resilience, citizen safety and security, critical urban infrastructure planning and design, health informatics and smart cities. He is a visiting lecturer at University College Dublin and Dublin Institute of Technology, lecturing in the areas of land use and transportation planning, strategic spatial planning, infrastructure planning, demographic analysis, research methods and GIS.

**Richenda Connell, CTO and co-founder, Acclimatise**  
Richenda is the CTO and Co-Founder of Acclimatise where she manages the development of products and services and ensures the company remains at the cutting-edge of best practice in climate risk management. She has 20 years expertise working at the interface between decision-making and scientific issues, on climate change, air pollution and environmental impact assessment. Over the last decade she has helped hundreds of UK public and private sector climate risks.

**Keith Clarke**  
The potential effects of carbon mitigation measures are a prize for society beyond anything yet achieved in the built form

The success or otherwise of a city has always been based on two factors: a strong, diverse economy and robust institutions in both the private and government sectors. These attributes have, in the past, been enough for global centres like New York to manage change. They enabled its transition from a manufacturing and mercantile economy to one based on a much more diverse set of industries, and kept the city together when 9/11 brought geopolitics to its door. But New York, and cities in general, cannot rely on institutions and history alone in the face of a new threat – that of climate change. As tropical storm Sandy brought home, catastrophic weather events are now a fact of life and cities cannot rely on their previous resilience alone to see them through. The obvious answer to this is to be practical: in the case of New York, investment in flood protection and hurricane proofing in vulnerable areas such as downtown Manhattan. While recovery rather than protection has paid off in the past, the likelihood of further extreme weather events makes this a dubious approach for the future. Treating the symptoms is not enough. A



Figure 1: Base London Panel Discussion; June 2014

At the BASE London Conference, Dr William Hynes and HARMONISE project partners University of Warwick and LeighFisher also led a panel discussion (see Figure 1; left) on the topic of urban resilience enhancement, referencing the HARMONISE approach.

Another output stemming from this event is an article

(authored by Dr. William Hynes) entitled 'Working Towards a Holistic Approach to the Resilience of London's Infrastructure' (pictured in Figure 2, below) which featured in the BASE London Event Guide. The full article can be accessed from the HARMONISE website – [www.harmonise.eu](http://www.harmonise.eu)

20 | 26.06.14 event guide

## WORKING TOWARDS AN HOLISTIC APPROACH TO THE RESILIENCE OF LONDON'S INFRASTRUCTURE

*With the rapid expansion of cities, the enhancement of urban security and resilience has become a far more urgent and significant task, necessitating more innovative and integrated approaches to urban development, says Dr William Hynes, founder, Future Analytics Consulting*

**T**oday, the UK has one of the highest rates of urbanisation anywhere in the world, with over 90% of the population now living in urban areas. And of course it's not just a homogenous phenomenon. In recent decades, the world has become increasingly urban. Indeed today it is estimated that 50% of the world's population lives in cities and this trend is likely to continue into the future, with an estimated 70% of the world expected to be urban dwellers by 2050.

This rapid expansion of cities is seeing a larger number of people and critical infrastructures to the threat of disasters and crisis events and posing additional challenges for the design, planning and management of urban areas. Within this context, the enhancement of urban security and resilience has become a far more urgent and significant task, necessitating more innovative and integrated approaches to urban development.

Highly specific meanings emerge. Since the early 2000s, the so-called 'resilience turn' has seen ideas associated with resilience embedded within an array of urban policy and practice. The emergence of ideas and practices of resilience within academic and policy debates and their relative influence on practice are highly specific to institutional contexts and emergent security risks faced in particular countries and their urban areas. For example, in the UK, the USA and

New Zealand resilience became a highly politicised policy rhetoric in the wake of natural and human induced disasters (most notably 9/11, 7/7 in London, Hurricane Katrina in 2005, and Sandy in 2012, and the Christchurch earthquake in 2011) and concerns that the infrastructural system and institutional frameworks in situ were ill-prepared to cope with similar future events.

Such events have triggered the emergence of a number of notable innovative resilience approaches, including the recruitment of chief resilience officers in a number of cities worldwide – the first of which was appointed in San Francisco in April. This particular development has been stimulated by the Rockefeller Foundation's worldwide challenge '100 Resilient Cities'.

There has also been a renewed focus on the need for more integrated decision-making models. In the wake of Hurricane Sandy, the city of New York looked to other cities for best practice examples in resilient water management.

Rotterdam gained particular attention in this regard. Collaboration and coordination has long been a feature of the Dutch system. To this day, Water Boards which originate from the Middle Ages, which guide long-term infrastructural planning, are a feature of every region. In contrast, the US, with greater municipal autonomy, has traditionally found coordination more difficult. Such difficulties are of significant importance in seeking to enhance critical infrastructure resilience. Critical infrastructures are not contained

by municipal boundaries – vulnerabilities are regional and thus require integrated approaches.

Today, resilience has a strong UK policy presence, driven by key legislation, including the Civil Contingencies Act 2004, which promoted local resilience forums to enhance and deliver both vertical and horizontal integration on resilience issues. In parallel to this, the Government also publishes bespoke resilience guidance linked to an array of risks, for use by local practitioners, including built environment

professionals. While the UK has made great strides in moving towards a more integrated approach, these practices are on the whole rather top-down in nature and stimulating policy integration in practice (and at a regional level) still requires further work.

Cities as complex interconnected systems. A need for integrated and holistic approaches to infrastructure development has also been highlighted by the nature and extent of damage to cities following

major crisis events in recent years – in particular, the damage caused by unforeseen cascading failures. Cascading effects refer to the 'snowball effect' of crises that in their cumulative impact can cause disasters. London's critical infrastructures, like systems across the developed world, is an increasingly complex interconnected system. It is this interconnected, interdependent system which demands a shift in policy focus from more 'protection' to enhanced 'resilience'. Over time, critical infrastructures across most of the developed world have become interconnected and mutually dependent in complex ways, both physically and through information and communication channels. Yet, unfortunately, the vulnerabilities generated by such inherent interconnectedness are often revealed only following crisis events such as natural disasters or man-made hazards.

Recent work in enhancing the resilience of critical and other large scale urban infrastructure has focused on embedding the ability to 'bounce back' or, more correctly, 'bounce forward' into urban systems and emergency management procedures. From this we can identify a number of separate interventions that have been, and continue to be, used to enhance the safety, security, and ultimately the ability of cities, and their associated social, economic and institutional systems to cope and respond in an event of a disaster, attack or other security challenges.

These urban security measures typically relate to territorial, design and planning, governance and technological interventions which have become prominent in policy debate and approaches to cities are increasingly scrutinised through the lens of 'resilience'.

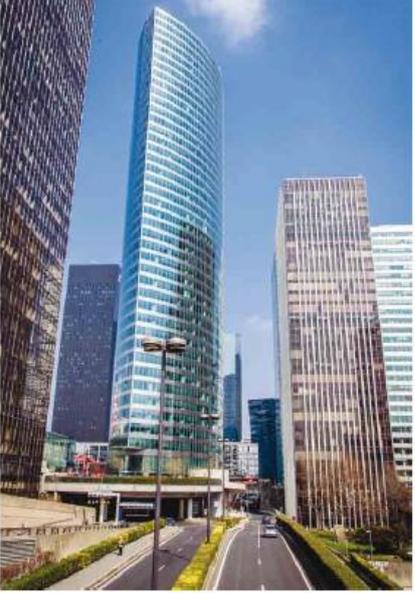
Developing an holistic approach. Yet despite this progress, to date, there is no comprehensive, holistic approach to

improve the resilience and security of critical large scale urban built infrastructure. The HARMONISE project, funded under the EU 7<sup>th</sup> Framework Programme, recognises and aims to address this need. The general aim of HARMONISE – A Holistic Approach to Resilience and Systemic Actions to Make Large Scale Built Infrastructure Secure – is to develop a comprehensive, multi-faceted yet mutually reinforcing concept for the enhanced security, resilience and sustainability of urban infrastructure and development.

Specifically, HARMONISE will:

- Facilitate a systematic approach (via the HARMONISE Interactive Semantic Intelligence Platform) to develop a security and resilience concept for a combination of complex and dynamic urban systems
- Deliver supporting tools (hosted within the platform) for the design/planning stage of large scale urban built infrastructure development, tested/enhanced through quality case studies (including London)
- Provide an integrated approach to sharing building infrastructure and security information (Building operation systems traditionally work in isolation) including critical flows of material/energy and sensor technologies etc, while recognising the important role of security culture and social acceptance aspects.

The HARMONISE project will facilitate the assessment of the vulnerability of urban infrastructure and will create new opportunities for enhancing resilience of large scale urban built infrastructure. The concept will be designed for use by civil authorities/municipalities and other key stakeholders involved in the design, planning, construction, operation or use of large scale urban built infrastructure. For more information please visit [www.harmonise.eu](http://www.harmonise.eu)





**Figure 2 above : Base London Article**

## 2.0 Future Security Conference; 16-18 September 2014

### THE DRIVE FOR HOLISTIC URBAN RESILIENCE

William Hynes<sup>1</sup>; Jon Coaffee<sup>2</sup>; Mervi Murtonen<sup>3</sup>; Peadar Davis<sup>4</sup>; Frank Fiedrich<sup>5</sup>

<sup>1</sup>[William.hynes@futureanalytics.ie](mailto:William.hynes@futureanalytics.ie)  
Future Analytics Consulting; 23 Fitzwilliam Square, Dublin 2 (Ireland)

<sup>2</sup>[J.Coaffee@warwick.ac.uk](mailto:J.Coaffee@warwick.ac.uk)  
Resilient Cities Laboratory; Faculty of Social Sciences; University of Warwick (UK)

#### Abstract

Keywords: Urban Resilience; Infrastructure; Security.

The urban environment is becoming more and more complex, not least with regard to security aspects following a decade of continuous threats to cities and their supporting infrastructures. A comprehensive and holistic (systematic) approach to improve the resilience of large scale development against attacks and disruptions has not been developed thoroughly. This paper draws from an EU Seventh Framework Programme project entitled HARMONISE – A Holistic Approach to Resilience and Systemic Actions to Make Large Scale Built Infrastructure Secure – which develops a comprehensive, multi-faceted concept for the enhanced security and resilience of urban infrastructure. This paper builds from the specific themes set out in the 2012 Future Security paper "Security for Critical Infrastructure and Urban Areas: A Holistic Approach to Urban Safety, Security and Resilience", presenting early results of attempts to operationalise holistic security and resilience concepts in urban praxis and demonstrating the need for more integrated resilience governance.

The HARMONISE consortium prepared a paper for the Future Security Conference; in September 2014. The paper entitled 'The Drive for Holistic Urban Resilience' was presented at the conference in Berlin, Germany and can be accessed through the HARMONISE website.



### THE DRIVE FOR HOLISTIC URBAN RESILIENCE

Stephen M. Purcell  
Director, Future Analytics Consulting  
Future Security 2014  
Berlin | 16-18 September 2014

Additional Authors: William Hynes; Jon Coaffee; Mervi Murtonen; Peadar Davis; Frank Fiedrich (with contributions from the full HARMONISE consortium)



Figure 3 and 4 above (left and right) illustrate Future Security dissemination material.



## 5.0 Preliminary HARMONISE Stakeholder Engagement Sessions

In each of the five case study cities (Dublin, Genoa, Vantaa, Bilbao and London) early stakeholder meetings were held with a range of urban decision makers during the period M1-M18. The purpose of these meetings was to introduce local urban decision makers to the HARMONISE project and to gather their views of the specific ‘resilience context’ of their city. The stakeholder engagement presentation is available on the HARMONISE website.

*Figure 7 (right) illustrates the HARMONISE Stakeholder Engagement Presentation*



