SPIRIT
International Research on Counter-Terrorism
An international research project developing new tools to counteract the threat from chemical, biological, radiological and explosive weapons.

Arup has partnered with ten other European companies and research organisations to undertake this £4.4m research project, which is part of the European Union’s Seventh Framework Programme for Research and Technological Development, and runs from 2010 to 2013.

SPIRIT will deliver:

- A methodology to quantify the vulnerability of built infrastructure in number of casualties, injuries, amount of damage and loss of functionality and services;
- A guidance tool for built infrastructure designers and builders to assess the vulnerability of a design/building and select efficient and cost effective countermeasures (ready to use solutions) to achieve a required protection level against terrorist attacks;
- Protection portfolios for new and existing buildings. This comprises inter alia blast resistant window/facade systems, retrofit system for walls, explosion resistant columns and detection and filtering systems to counter the CBR threat;
- Recommendations for draft EU regulatory framework to enable safety based engineering and the incorporation of ‘CBRE protection’ in the regular building guidelines and regulations.

Our research in SPIRIT will concentrate on three areas:

**Threat assessment and scenarios**

We will develop threat assessment tools and methodologies for the built environment. This will inform the production of credible threat scenarios. These scenarios form the basis for the design of countermeasures against terrorist actions. Arup is leading the threat assessment and scenario production work stream within the SPIRIT consortium.

**Cost/benefit analysis**

Through SPIRIT we will develop new cost/benefit tools to guide investment in terrorism countermeasures where it will yield most benefits.

**Physical protective measures**

Arup and its partners will assess existing products already on the market for their suitability to counteract existing and future threats. In this work stream we will contribute to several elements of the SPIRIT research project, in particular those related to glazing and façades.

The EU’s Seventh Framework Programme on Research and Technological Development runs from 2007 to 2013. Security is one of ten themes in the framework programme. Through the €51bn framework programme cross-border European security research is supported with grants of a total of €1.4bn. SPIRIT involves partners in Austria, France, Germany, Italy, the Netherlands, Poland, Switzerland and the United Kingdom.

Arup and its partners are developing new methods and tools for use in threat assessment. We will also establish new methods for achieving effective cost/benefit analysis in counter-terrorism projects as well as conduct an extensive review of existing products for blast protection.

**Partners in the SPIRIT consortium:**

![Partners logos]

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Arup’s experience and services span a broad spectrum of physical and operational environments, against a varied backdrop of hazards and threats.

Arup’s Resilience, Security and Risk team, formally established in June 2001, provides protective intelligence consultancy for commercial and government clients throughout the world.

Whether exposure originates from natural hazards like earthquakes or the human-driven threat of political instability, our world-class professionals help regional and global organisations understand the risks to their people, assets and services, enabling them to develop practical, cost-effective strategies to manage those risks in the long term.

We have worked with State governments in Africa, the Middle East, South East Asia, East Asia, the UK, continental Europe and the Americas, advising industry and shaping both national and global strategy. Arup’s Resilience, Security and Risk business is approved by the UK Government to work routinely with protectively marked material. Our team includes engineers, scientists, designers, technologists and former military personnel who are experienced at both working to existing codes of practice and developing new standards on a national and international level.

Our experience and services span a broad spectrum of physical and operational environments, against a varied backdrop of hazards and threats. We make tactical and strategic recommendations for facility design, systems specifications, methodologies and processes, business continuity and compliance with regulatory matters, including public law. Our approach is applicable from project inception through detailed design, to construction and operation.

Operating from regional hubs in London, Washington D.C., Los Angeles, San Francisco, Abu Dhabi, Sydney, Melbourne, and Hong Kong, we can call upon analysts based in our offices around the world to give local context to global issues.

Our key services include:

**Protective intelligence:** Assessment of malicious risks to organisations’ people, assets and services, to determine appropriate mitigation against man-made risks.

**Technical risk assessment:** Technical risk assessment across all industry sectors, from operational safety protection to accident risk management in construction, as well as assessment of and mitigation against natural hazards.

**Business continuity planning:** Comprehensive business continuity solutions that include advice on planning for disruption to IT, facilities access, staffing levels, our clients’ supply chain and other activities within their value chain.

**Enterprise risk management:** Risk education, policy development, risk response planning and advice on organisational risk tolerance, cultural issues and appropriate ERM software.

**Security engineering:** Risk-led security engineering to design and deliver safe and secure environments.

**Geomatic services:** Spatial solutions to challenging problems through the integration of 3D models and GIS tools to assist clients in their situational awareness and command and control.

**Counter-terrorism and building resilience:** World-leading engineering expertise in structural and façade resilience against blast and other extreme actions, hostile vehicle mitigation and evacuation/invacuation strategies.
About Arup

Arup is the creative force at the heart of many of the world’s most prominent projects in the built environment and across industry. We offer a broad range of professional services that combine to make a real difference to our clients and the communities in which we work.

We are truly global. From 90 offices in 35 countries our 10,000 planners, designers, engineers and consultants deliver innovative projects across the world with creativity and passion.

Founded in 1946 with an enduring set of values, our unique trust ownership fosters a distinctive culture and an intellectual independence that encourages collaborative working. This is reflected in everything we do, allowing us to develop meaningful ideas, help shape agendas and deliver results that frequently surpass the expectations of our clients.

The people at Arup are driven to find a better way and to deliver better solutions for our clients.

We shape a better world.