Reference no.:	**15**
JRC Directorate	E – Space, Security & Migration
Unit	E.4 – Safety and Security of Buildings
Location	JRC, Ispra (Italy)
Short description of the activities of the Unit	Unit JRC.E.4 – Safety and Security of Buildings performs research related to the security, safety and efficiency of buildings and physical infrastructures and their critical elements to create harmonized guidelines for better safety, security and competitiveness on European level. The Unit conducts pre-normative research towards related European standards for safety and security, addressing sustainability and efficiency issues in close collaboration with European Standardisation Organisations and policy makers.
Title of the JRC proposed Activity:	**Numerical simulations of human brain vulnerability to blast loading**
Short description of the proposed activity:	The recent terrorist attacks have intensified the need for more research related to the protection of public spaces (soft targets). Understanding better the effects of blast waves on humans, and the human brain in particular, will contribute to the work on the assessment of potential human injuries and on the development of appropriate mitigation strategies. Computational models (explicit finite element method), which are a fast and reliable tool for analysing blast effects on structures, can also be used to analyse blast effects on humans. The Unit has done research on the topic and there are computational models of the effect of blast waves on rat heads. The activity consists of (a) further developing a model for human brain under blast loading and (b) making parameter studies in order to investigate the brain behaviour under different blast loading conditions. The explicit finite element software EUROPLEXUS will be used.
Required profile of the Partner Institution:	University or Research Institution with a department of Engineering and/or Mathematics and/or Physics

Indicative required profile of the researcher/expert (that will implement the activity)	University degree in civil/structural engineering or mathematics or physics or a related filed. PhD in a related field would be an asset. Previous research or professional experience relevant to the topic of the call and experience in the use of explicit finite element method (FEM) software would be an asset.