Soggetto coordinatore	UniRoma2
Titolo del progetto	DEcentralized, cooperative, and privacy-preserving MONitoring for trustworthiness Safe Port Operations using EGNOS SoL Services
Acronimo	DEMONS
Descrizione del progetto	There are societal challenges, as well, as growing awareness of privacy issues leads to unease with the traditional measurement approach of centralized storage and analysis of traffic information. Attempts to further centralize the response to these threats will simply not work. Therefore, network traffic monitoring and measurement must be made effective across domain boundaries in order to meet the challenges of this environment. Cooperative threats and distributed failures call for a distributed, cooperative detection and mitigation infrastructure. Specifically, DEMONS aims to design and demonstrate the operation of a network for cooperative monitoring. We will apply innovative measurement, analysis and data protection techniques across a network of flexible monitoring nodes in multiple domains to accomplish cooperation, resiliency, and scalability in measurement, and confidentiality of measured traffic.
TA/SG	TA 5
Riferimento Bando	FP7-ICT-2009.1.4
Valore del progetto	**€** 3,473,430
Pubblicazioni	G. Bianchi, N. D'Heureuse, S. Niccolini, "On-demand time-decaying bloom filters for telemarketer detection", SIGCOMM Computer Commun. Review 41, 5 pp. 5-12. S. Niccolini, F. Huici, B. Trammell, G. Bianchi, F. Ricciato, Building a decentralized, cooperative, and privacy-preserving monitoring system for trustworthiness: the approach of the EU FP7 DEMONS project [Very Large Projects], IEEE Communications Magazine, Volume: 49 , Issue: 11, 2011, Page(s): 16 - 18 S. Pontarelli, G. Bianchi, S. Teofili, "Traffic-aware Design of a High Speed FPGA Network Intrusion Detection System" Accepted to Transaction on computers,2012 G. Tropea, G. V. Lioudakis, N. Blefari-Melazzi, D. I. Kaklamani, I. S. Venieris, Introducing Privacy-Awareness in Network Monitoring Ontologies, in Proc. 21st Tyrr. Workshop on Digital Communications:

	Trustworthy Internet, Island of Ponza, Italy, September 6-8, 2010. S. Teofili, E. Nobile, S. Pontarelli, G. Bianchi "IDS Rules adaptation for packets pre-filtering in gbps line rates" in proc. 21st Tyrrhenian Workshop on Digital Communications: Trustworthy Internet, Ponza, Italy, September 2010 G. V. Lioudakis, G. Tropea, I. S. Venieris, D. I. Kaklamani, N. Blefari-Melazzi, Combining Monitoring and Privacy-Protection Perspectives in a Semantic Model for IP Traffic Measurements, in Proc. 25th International Symposium on Computer and Information Sciences (ISCIS 2010), London, UK, September 22 – 24,2010. J. Seedorf, S. Niccolini, A. Sarma, B. Trammell, G. Bianchi, "Privacy Preservation Techniques to establish Trustworthiness for Distributed, Inter-Provider Monitoring", Privacy Workshop jointly sponsored by the Internet Architecture Board (IAB), World Wide Web Consortium (W3C), MIT Computer Science and Artificial Intelligence Laboratory (CSAIL), and Internet Society (ISOC), Boston, USA, December 2010 Salvatore Pontarelli, Simone Teofili, Giuseppe Bianchi: Hardware-Based"on-the-fly" Per-flow Scan Detector Pre-filter", TMA 2011, pp. 181-184 Salvatore Pontarelli, Simone Teofili: Anti-evasion Technique for Packet Based Pre-filtering for Network Intrusion Detection Systems, (Poster). TMA 2011, pp. 185-188 Christian Callegari, Stefano Giordano, Michele Pagano, and Teresa Pepe. Detecting Heavy Change in the Heavy Hitter Distribution of Network Traffic. International Workshopon TRaffic Analysis and Classification (TRAC 2011), July 5 -8, 2011, Istanbul, Turkey G. Bianchi, H. Rajabi, M. Sgorlon, "'Enabling Conditional Cross-Domain Data Sharing via a Cryptographic Approach", COSEC 2011, Bangalore, India Nicola Bonelli, Andrea Di Pietro, Stefano Giordano, Gregorio Procissi. Packet Capturing on Parallel Architectures. IEEE International Workshop M&N 2011, October 10-11 2011 Christian Callegari, Stefano Giordano, Michele Pagano, and Teresa Pepe. Combining Wavelet Analysis and Information Theory for Network Anomaly Detection. 4th International Symposium on Applied Sciences in Biomedical and Communication Technologies (ISABEL 2011), October 26-29, 2011, Barcelona, Catalonia, Spain Christian Callegari, Stefano Giordano, Michele Pagano, and Teresa Pepe. Forecasting the Distribution of Network Traffic for Anomaly Detection. IEEE TrustCom 2011, November 16-18 2011, Changsha, China D. Ficara, G. Antichi, N. Bonelli, A. Di Pietro, S. Giordano, G. Procissi, F. Vitucci. Scaling Regular Expression Matching Performance in Parallel Systems through Sampling Techniques. IEEE Globecom 2011, 5-9 December

	2011, Houston, Texas, USA Gianni Antichi, Andrea Di Pietro, Stefano Giordano, Gregorio Procissi, Domenico Ficara. Design and Development of an OpenFlow Compliant Smart Gigabit Switch. To appear in IEEE Globecom 2011, 5-9 December 2011, Houston, Texas, USA N. Bonelli, A. Di Pietro, S. Giordano, G. Procissi. PFQ: a Novel Engine for Multi-Gigabit Packet Capturing with Multi-Core Commodity Hardware. PAM 2012 (best paper award) Christian Callegari, Andrea Di Pietro, Stefano Giordano, Teresa Pepe, and Gregorio Procissi. The LogLog Counting Reversible Sketch: a Distributed Architecture for Detecting Anomalies in Backbone Networks. ICC 2012 Christian Callegari, Stefano Giordano, Michele Pagano, and Teresa Pepe. Combining Wavelet Analysis and CUSUM Algorithm for Network Anomaly Detection. ICC2012
Curriculum	