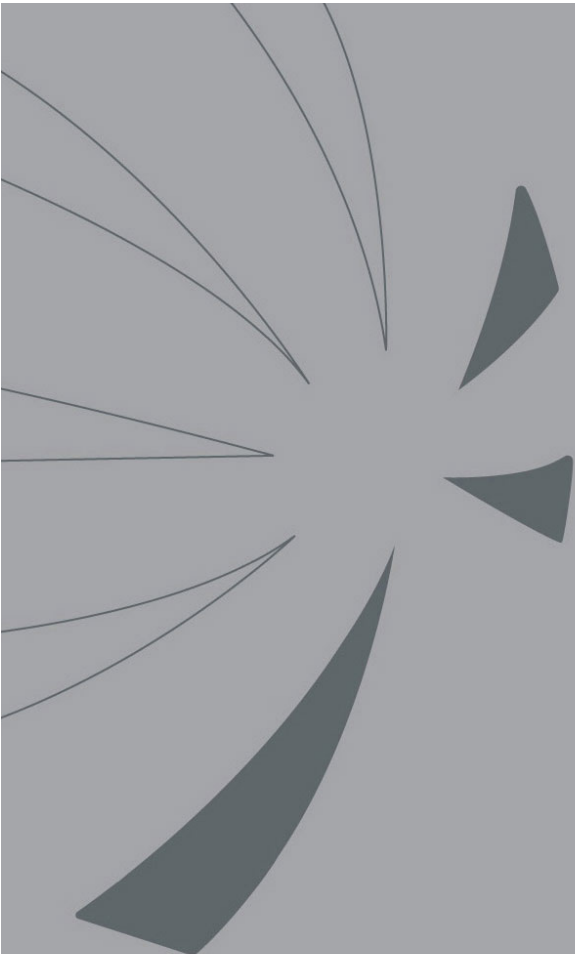




Cloud Computing - Il progetto RESERVOIR - una infrastruttura Service Oriented 'on demand' per i servizi IT

L'innovazione tecnologica per la
homeland security: opportunità e rischi
del Cloud Computing

TechFOr - Roma, 17 Maggio 2010

Stefano Beco – stefano.beco@elsagdatamat.com



17/05/2010

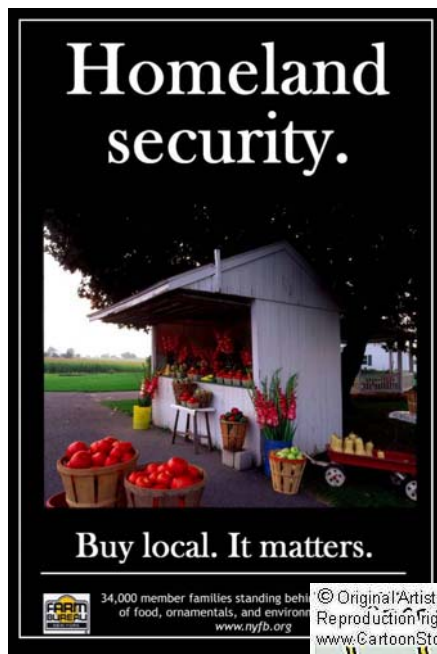


Il progetto RESERVOIR - una infrastruttura Service Oriented
'on demand' per i servizi IT

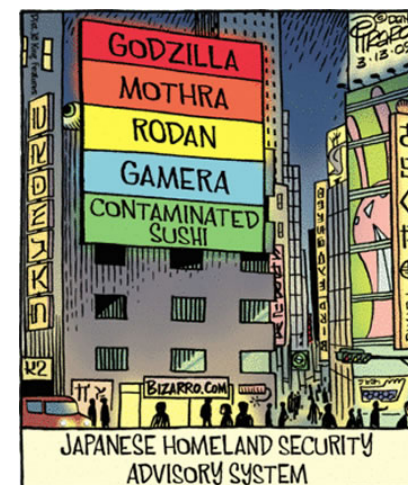
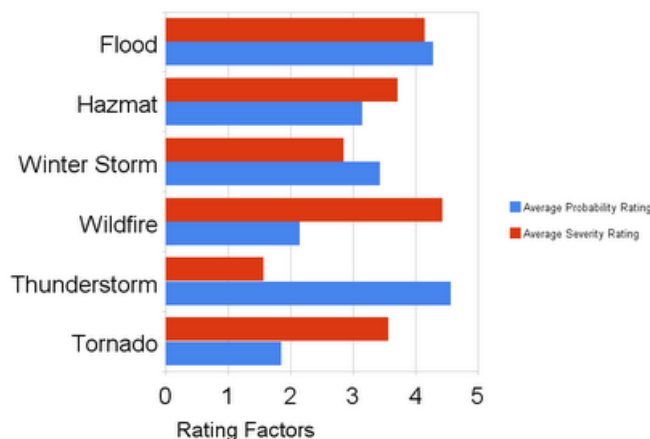


- Il problema e la sua risposta: “Homeland Security” e il “modello NATO per una DII”
- I bisogni e le necessità
- La soluzione: la tecnologia Cloud ed il progetto RESERVOIR (Resources and Services Virtualization without Barriers)
- Conclusioni

Il problema “Homeland Security”

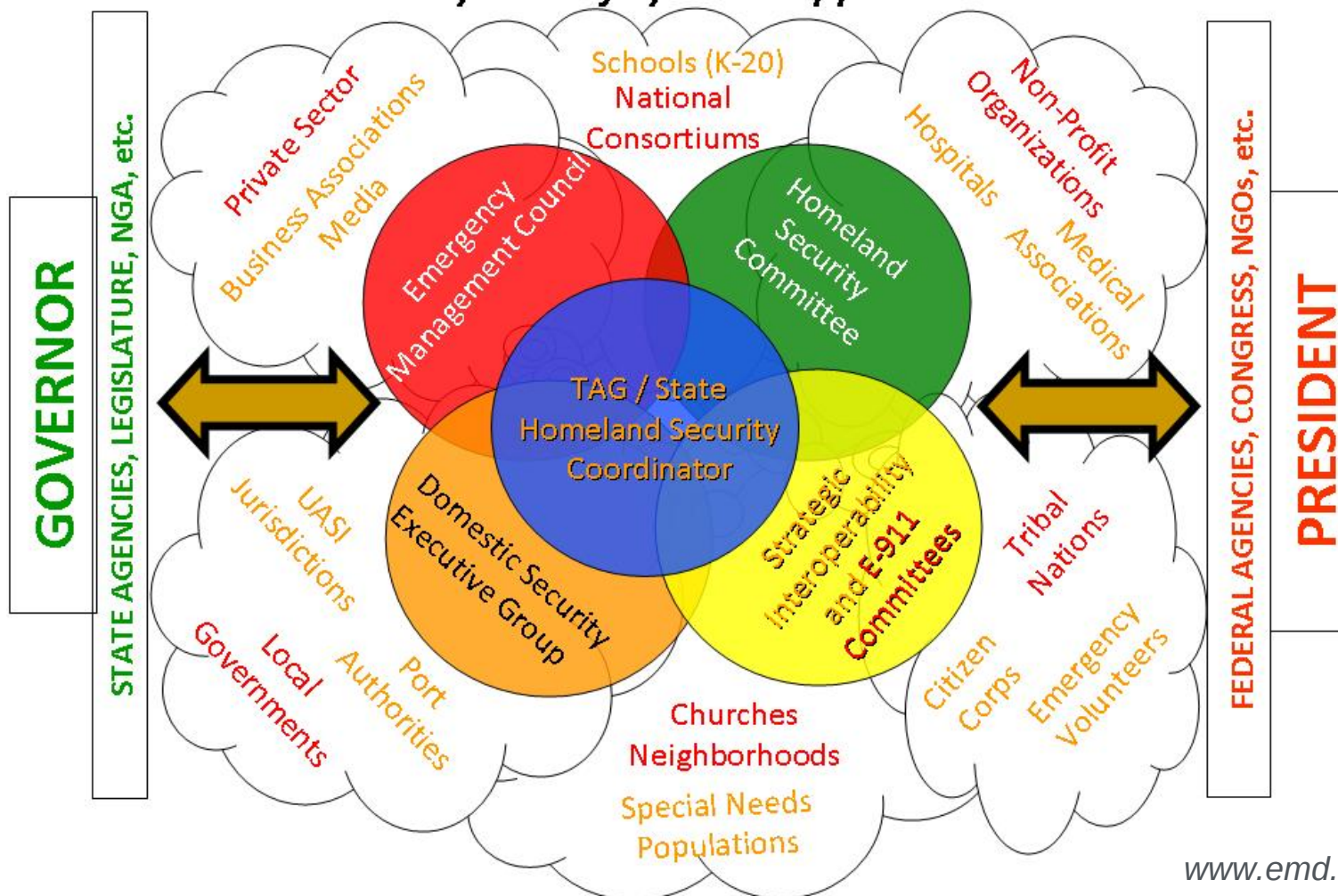


Disaster Probability/Severity Ratings



Homeland Defense – Homeland Security

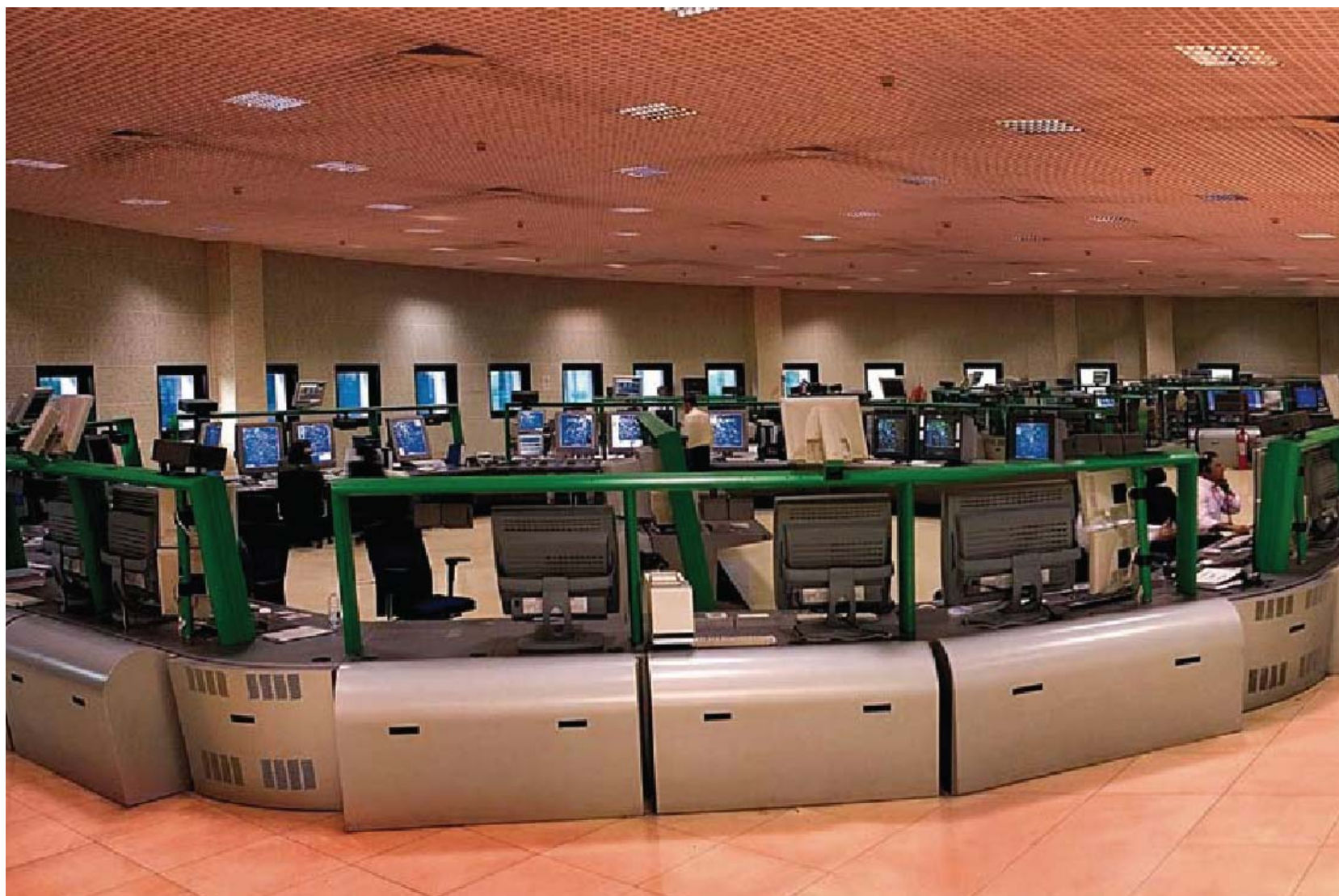
- A System of Systems Approach -



www.emd.wa.gov

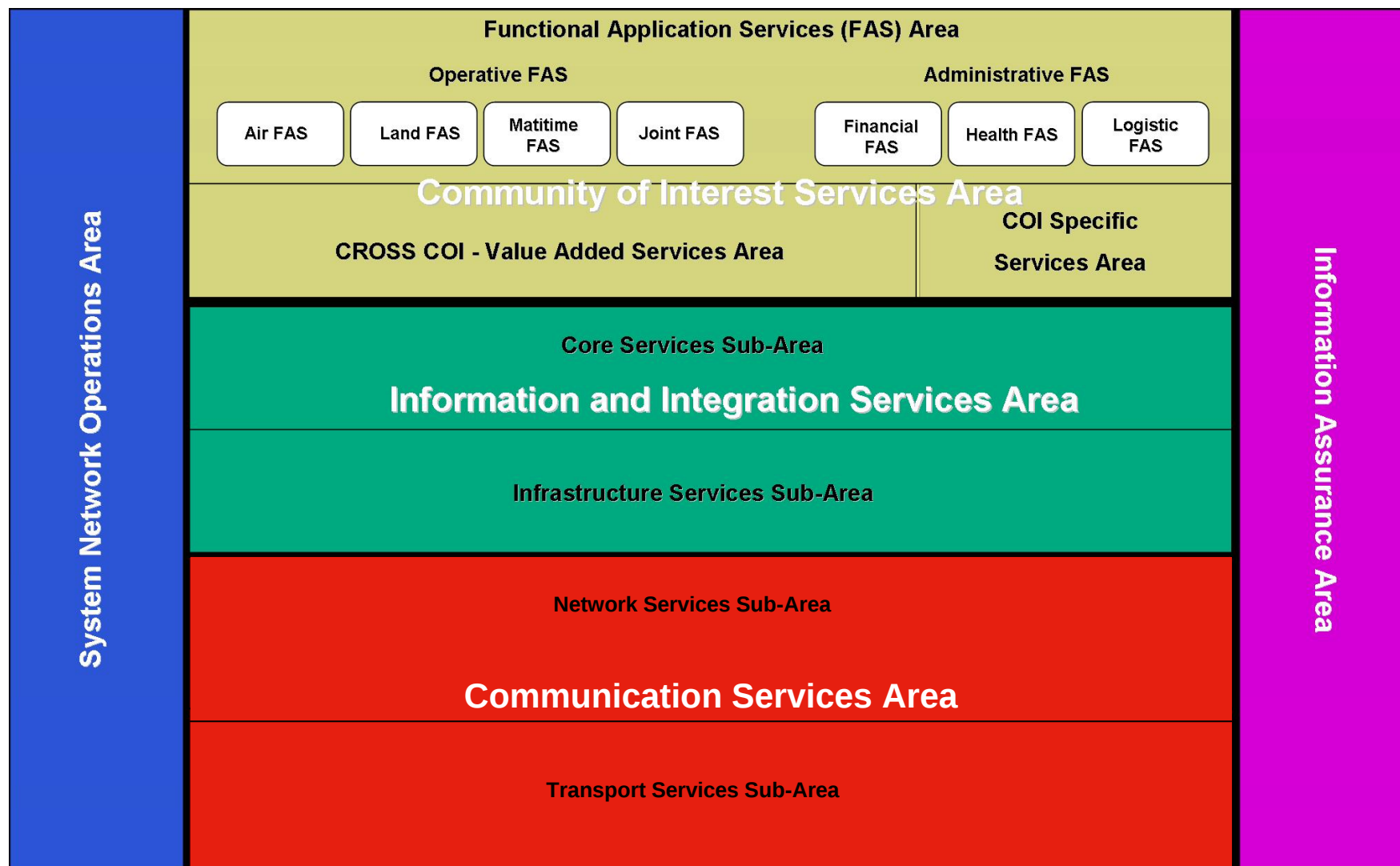


Il problema “Homeland Security”





La risposta: il modello NATO per una DII





I bisogni e le necessità



- Interoperabilità
 - Sfruttamento di risorse distribuite eterogenee in modo gestito
- Sicurezza
 - Accesso alle risorse ed utilizzo delle stesse in modo controllato
- Garanzia di continuità operativa
 - Le minacce interne ed esterne non hanno soste e spesso non avvisano



La soluzione: la tecnologia Cloud



- Cloud è un'esperienza utente e un modello di business
 - Il Cloud computing è uno stile (paradigma) emergente di computing in cui le applicazioni, i dati, e le risorse IT sono fornite come servizio a utenti via internet (sul web).
- Cloud è una metodologia di gestione delle infrastrutture
 - Il Cloud computing è una modalità di aggregazione di un elevato numero di risorse altamente virtualizzate che consente, da una prospettiva di gestione, una vista dei Data Centres federati come un'unica risorsa integrata.



La soluzione: **RESERVOIR**



Resources and Services Virtualization without Barriers

<http://www.reservoir-fp7.eu>



The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 215605.



La soluzione: **RESERVOIR**



- *RESERVOIR will enable massive scale deployment and management of **complex IT services across different administrative domains**, IT platforms and geographies.*
- *The project will provide a **foundation for a service-based online economy**, where - using virtualization technologies - resources and services are transparently provisioned and managed on an on-demand basis at competitive costs with high quality of service.*



L'architettura RESERVOIR



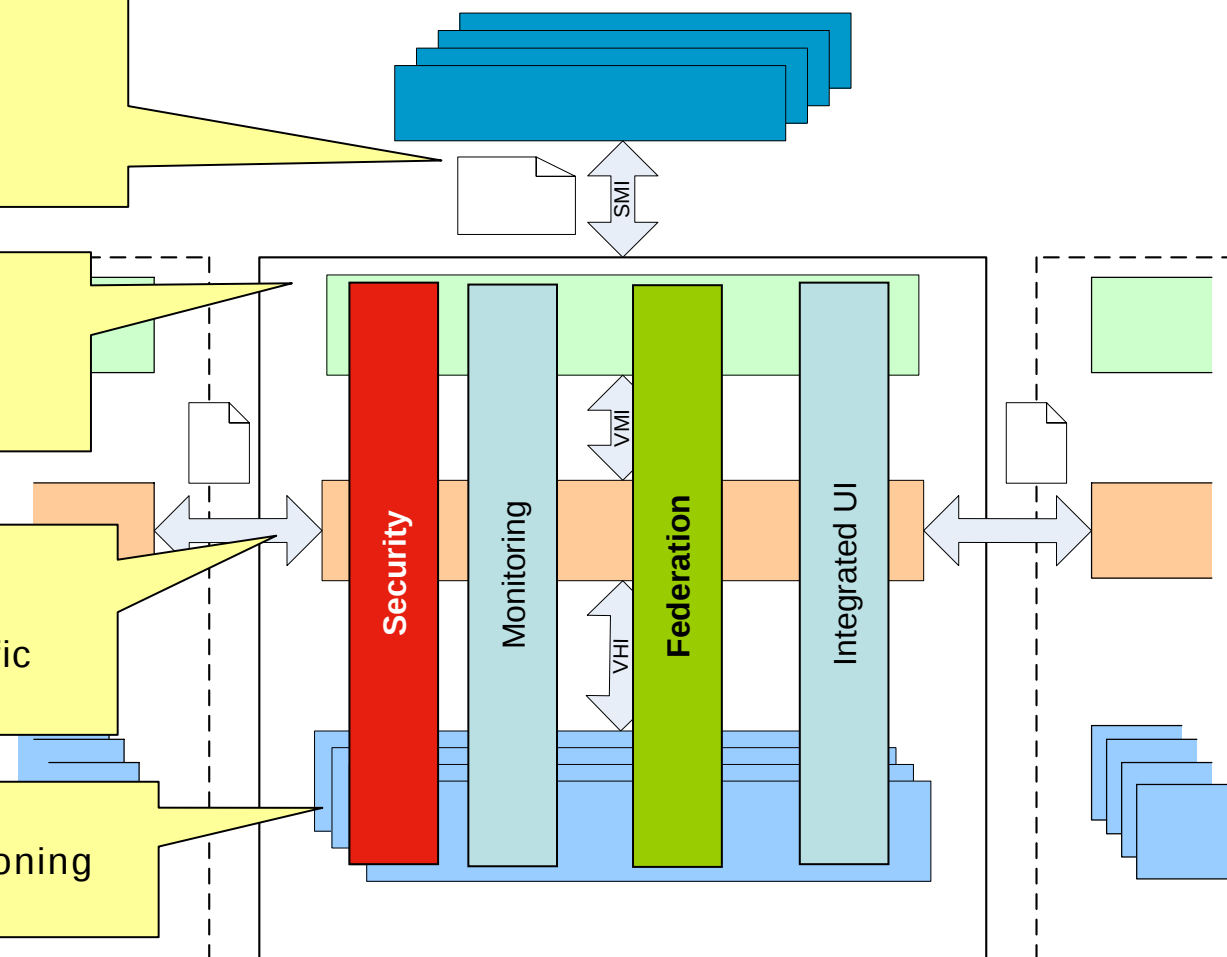
Service definition:

- Extended OVF
- Elasticity Rules
- Automation
- SLAs

- Service provisioning
- Auto-scaling (elasticity)
- SLA management
- Accounting and Billing

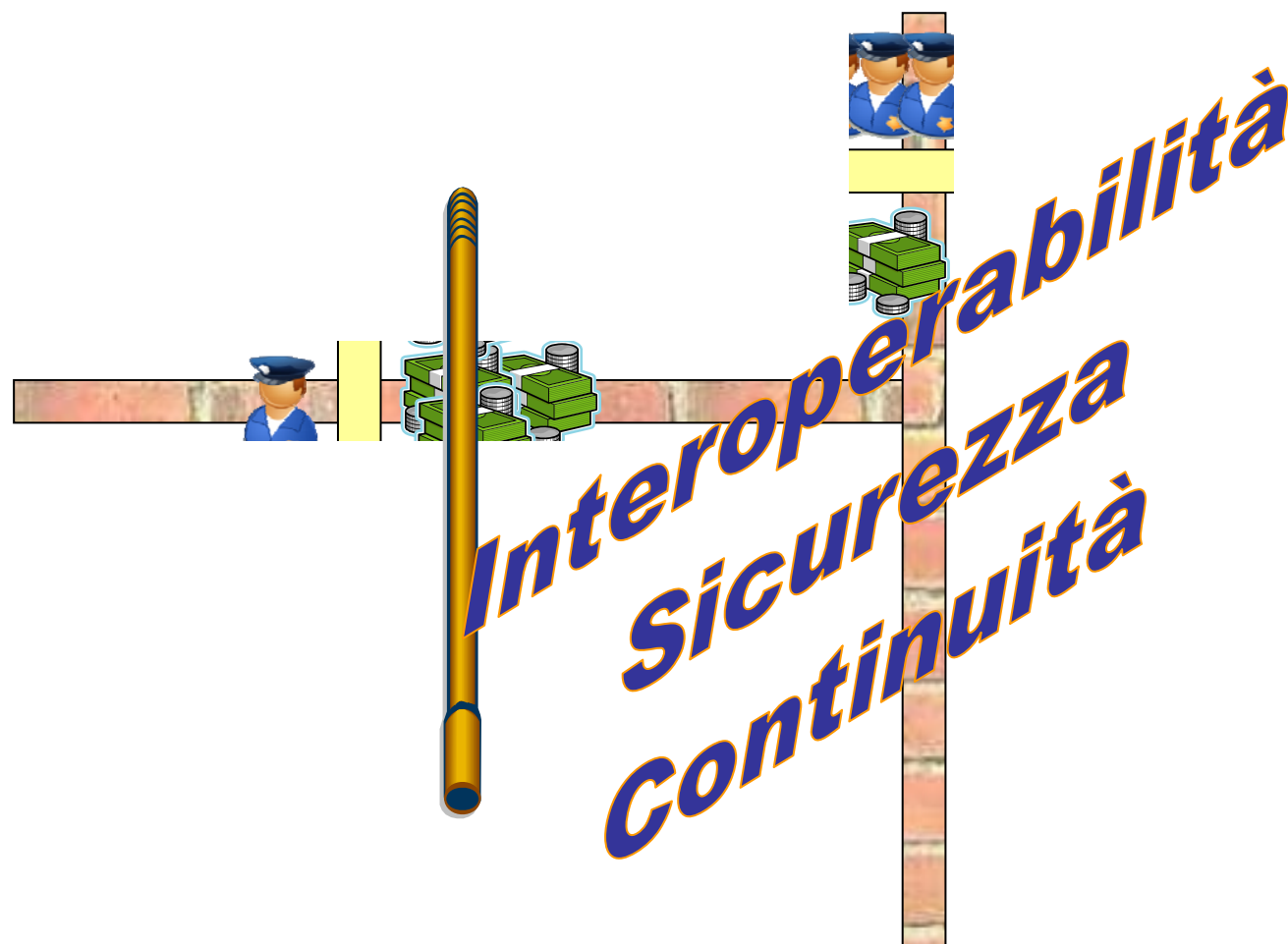
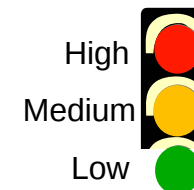
- Resource allocation
- Optimized placement
 - Driven by site-specific policies

- Virtual Networking
- Efficient VM provisioning and migration





RESERVOIR Hybrid Cloud





- Federation across clouds
- Live migration without shared storage
- Monitoring across data centres and clouds
- Accounting & Billing across data centres and clouds
- Open Virtualization Format extensions for Elasticity and Rapid Provisioning
- Security mechanisms for deployment and relocation of virtual machines across physical machines and sites



RESERVOIR e il mercato



Gartner®

*Illustration only, not a complete list of vendors



Conclusioni



- La Homeland Security è un problema intrinsecamente distribuito, che ha bisogno di risposte che sfruttino risorse distribuite, ad esempio modello NATO
- Interoperabilità, sicurezza e continuità di servizio sono bisogni che accomunano il mondo del business con quello della difesa
- Elsag Datamat vede in RESERVOIR una risposta tecnologica che ben si adatta ai bisogni della Homeland Security



Grazie dell'attenzione



“... The World Wide Web is becoming one vast, programmable machine. As NYU's Clay Shirky likes to say, Thomas J. Watson was off by four ...”

From [Wired Magazine Q&A with Nicholas Carr](#)





Baseline technologies

- Open Virtualization Format (OVF)
- KVM (Linux, base for Virtual Execution Environment Host, VEEH)
- Libvirt (RedHat, part of VEEH Interface, VHI)
- OpenNebula (base for Virtual Execution Environment Manager, VEEM)
- EzWeb (SM GUI)
- COIN-OR OS (optimization services part of Policy Engine)

What RESERVOIR adds

- Service manifest
- VHI
- Extended OpenNebula (VEEM)
- Service Manager (VEE lifecycle, SLA protection, deployment business rules)
- Policy Engine
- Virtual Area Networks (VAN)
- Runtime Image customization
- Monitoring framework



Backup – What is RESERVOIR?



What is RESERVOIR?

RESERVOIR

- Open and standard framework for IaaS
 - In a market that is highly volatile, dynamic and evolving
- A complete IaaS System
 - Can be used as is
- A component-based approach
 - Framework can be implemented and extended
- Single components may be used, as well as the whole framework
- Standards-based:
 - Manifest extends DMTF's OVF
 - VMI is OCCl-compliant
- Can be used to construct:
 - Private, trusted-provider, community, hybrid, public cloud setups
 - Flexible cloud bursting scenarios
 - The vision of a European Cloud