



Creating Serbia eGovernment Cloud infrastructure

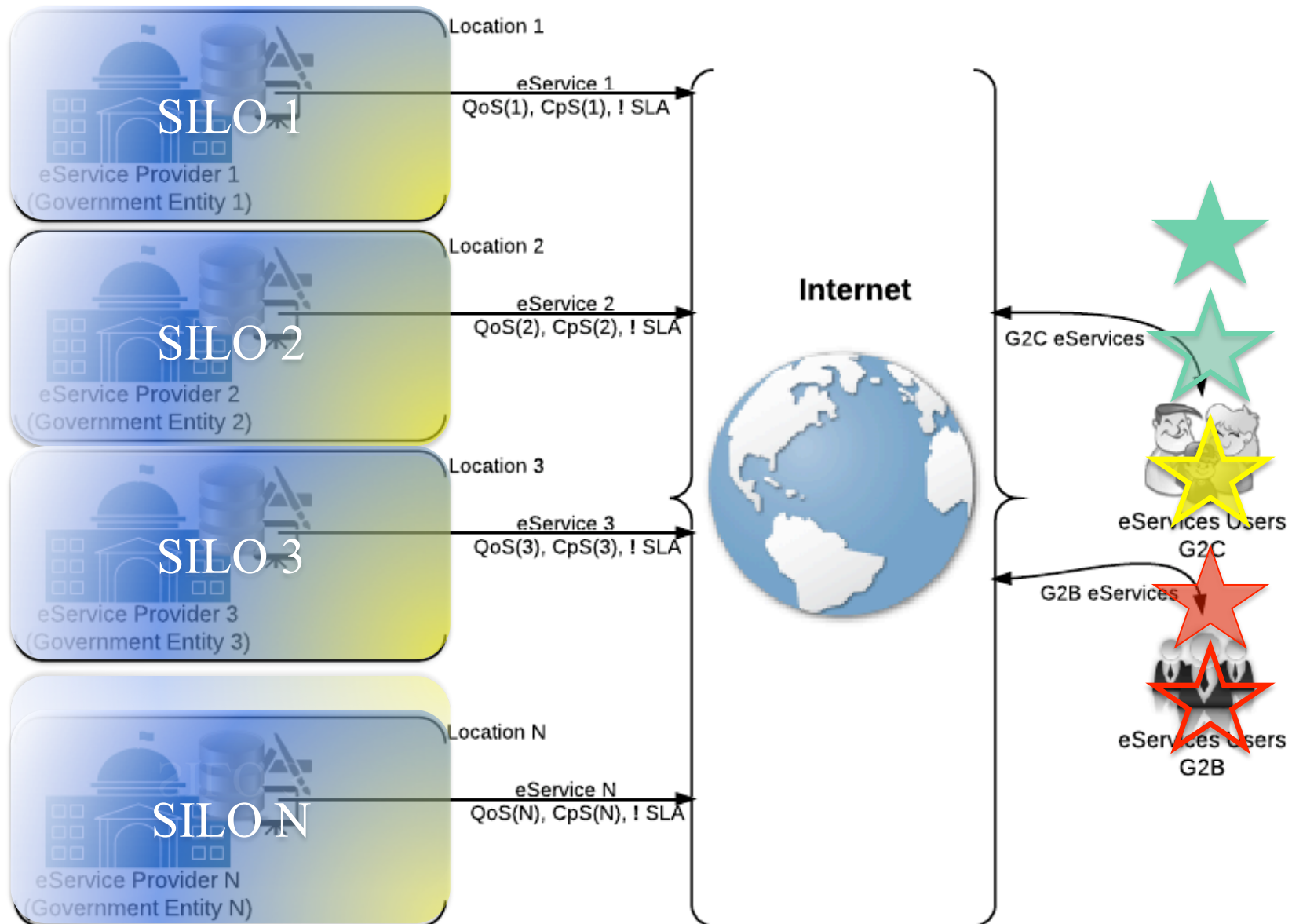
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Introduction

- Serbia eGovernment Development Problems
 - Different entities publish 20 priority eServices
 - >10 different entities responsible for 20 priority eServices
 - eServices offered from different locations (\$\$\$)
 - Extremely HI costs for maintenance & new development!
 - eServices offered with different & variable QoS
 - Majority of eServices at sophistication level 2 (!?!\$\$\$\$YMD!?!)
 - eServices offered without any guarantee (SLA)
- Tasks
 - EU eGovernment Action Plan 2011-2015 Efficiency & Effectiveness
 - Consolidation – Single DC Cloud OR National Cloud (CDC+NxRDC)
 - Cost reduction – Extremely low dev & main costs @longer run!
 - Defined QoS & SLA for each eService
 - EU eGovernment Action Plan 2011-2015 Empower Citizens & Biz
 - Focus on eServices and their users
- Goal \Leftrightarrow achieve sophistication levels 3/4/5 by 2013/4/5

Introduction



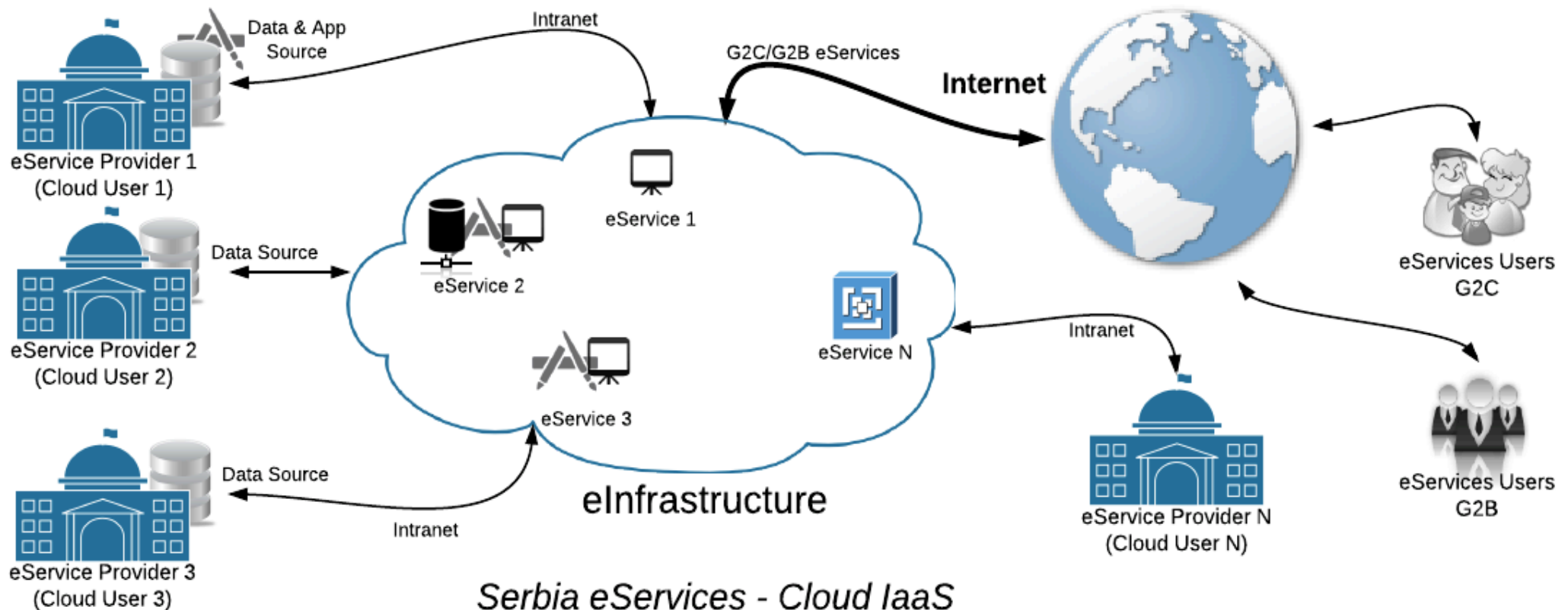
Serbia eGov Development Problems

Project Introduction

- Project initiated by former Ministry for PALSG (MoJ)
- "Preparation of Terms of Reference and Technical Specifications for the IPA 2010 project component `Support to eGovernment development`"
- FWC Ref. EuropeAid/123314/C/SER/multi
- Technical Assistance (TA) & Supply components
- TA
 - Legal backgrounds
 - Evaluate & prepare 4 (four) chosen eServices for migration
 - Duration 18 months (until September 2012)
- Supply
 - Finished end of 2011 (~21 months)
 - 2.5MEUR, equipment & software
 - Establish Serbia eInfrastructure
- New Serbia eInfrastructure to host 20 priority eServices

Solution Introduction

- Tasks
 - Consolidation – Single DC Cloud OR National Cloud (CDC+NxRDC)
 - Cost reduction – Extremely low dev & main costs @longer run!
 - Defined QoS & SLA for each eService
- Goals
 - Focus on eServices and their users
 - eServices to achieve sophistication levels 3 / 4 / 5 by 2013 / 2014 / 2015



Solution Description

- Solution Building Blocks
 - UPS – 64KW, redundant & modular, upgradable to 192KW
 - Cooling – Air, in row cooling, connected to air preparation unit
 - Blade Servers – 1152 cores, 6-core procs, mixed AMD & Intel
 - Storage – 70TB FC raw, 152TB SATAII raw, RAID 1/10/5/6
 - DC CEE LAN - 10Gb CEE/DC switches, FCoE & iSCSI
 - WAN/MAN - Core High-Capacity Router FE/1Gb/10Gb
 - Internet/WAN - Network Security Appliance
 - FW/IPS/VPN/CP&F, x1Gbps, A/A cluster
 - Virtualization
 - Server Bare Metal, VMware 5, NIS & DNS VM
 - Basic IaaS
 - vCenter Server Virtual Appliance (vCSA) Linux VM
 - 4 (four) clusters with HA/FT, DRS, BR
- Cloud IaaS (Central DC) <=> Serbia "eInfrastructure"

Security Issues

- Cloud Security Research Report by Ponemon Institute©
 - Cloud services security not seen as a competitive advantage
 - Cloud services security not seen as most important obligation
 - *"It is the cloud user responsibility to secure his cloud service"*
 - Primary cloud reasons - lower cost & faster app deployment
 - No dedicated cloud apps & infrastructure security personnel
- Cloud User Types in Serbia
 - Type I \Leftrightarrow "If you build it, they will come!"
 - Type II \Leftrightarrow "If you convince me, I will play!"
 - Type III \Leftrightarrow "Nothing can convince me to play!"
- Project Security Reality
 - Security has been given highest importance from the start!
 - Security identified as major risk during eServices migration!
 - "Shared Responsibility" assumed to secure eServices!
 - Cloud benefits OK **but** NOT at the cost of eServices security!
 - New organization underway reflecting dedicated personnel!

Security Design

- Cloud computing security risks
 - Ensure recovery from significant IT failures
 - Physical & Virtual Redundancy / Backup (HA/FT)
 - Ensure data assets are in safe environments
 - 2 (two) Power Grids, Gen, In-row Cooling, Safe DC environment
 - Investigate inappropriate or illegal activity
 - Auto e-mails based on Sec Policies (Events & Traps), Log Analysis
 - Ensure viability and availability of IT
 - 3Y Project Warranty, long-term contract with GSP, MPALSG budget
 - Ensure compliance with regulations and laws
 - Audit compliant to Serbian laws (Personal Data Protection, Free Access to Information of Public Importance etc.)
 - Ensure proper data segregation
 - Each eGov Service (Data/App) VLAN/VC encapsulated Start2Fin
 - Restrict privileged user access
 - Web Apps (G2C/G2B) & Web Services (G2G)
 - Privileged access to user VLAN only from tenant Intranet

Governance

- Post-Project Completion Phases
 - Transfer priority eServices to new Serbia eInfrastructure
- Data Governance
 - Create Metadata
 - Optimize Data
 - Create National Registries
 - Securely share National Registries as internal services (REST/SOA)
- Access Governance
 - Rules for ...
 - Service publishing
 - Service access and security
 - Data exchange & retention
 - Accountability & compliance etc.
- "Regulations on governing eInfrastructure"

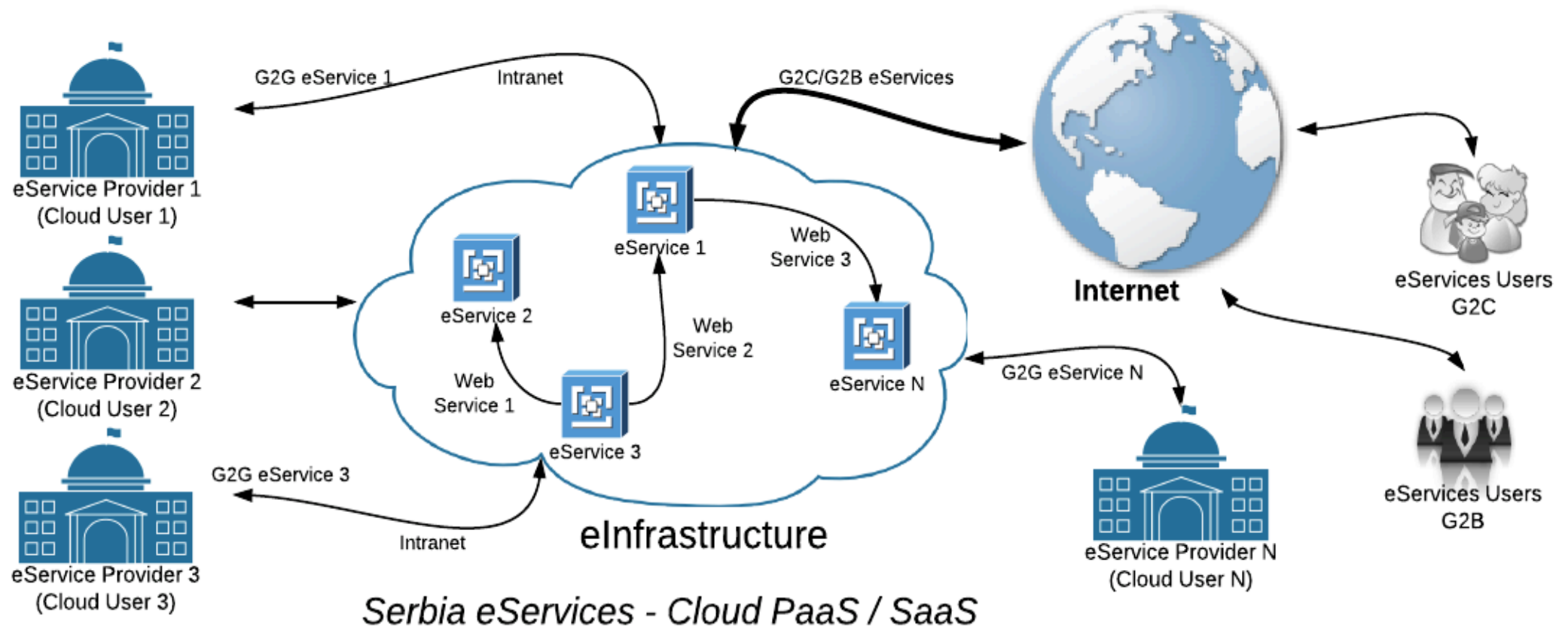
Future Trends

- Cloud One Minute Context
 - >200M emails sent
 - >90K hours viewed, >70 hour uploaded on YouTube
 - >20M photo viewed, >3M uploaded on Flickr
 - >100K tweets
 - >250K logins and >5M views on Facebook
 - >2M searches on Google
- Energy-efficient 64-bit computing (ARMv8 by 2014)
- Green data centers (PUE = 1, CU<100W PU)
- Smart phones and tablets (Apps, BYOD, VM, ?CU?)
- Big Data (30%-60% data growth, cloud integration)
- Distributed Storage Systems (cloud and big data integration)
- SDN (virtualized net, central control & config, fast provisioning)
- *Disruption by demand, complexity (25% functionality ↑ => 100% complexity ↑) and FUD*

Future Development

- Serbia National Cloud eInfrastructure for all eServices
 - Include all G2G / G2C / G2B / O&M services
 - PaaS
 - Basis for Everything-as-a-Service (XaaS)
 - Flexible and fast (implement, customize, localize, dev & main)
 - XaaS
 - Identification and Access Management
 - Security Information and Event Management
 - Content / Doc / Records / Case Management
 - Contact / Call Centers / CRM
 - File Sharing ...
- Focus on ...
 - Services NOT Procedures
 - Users NOT Tools
 - Quality NOT Technology
 - Satisfaction NOT Possibilities
- Decentralize eServices closer to users (region / LSG)

Future Development



Thank You



FINANSIRANO OD STRANE EVROPSKE UNIJE

Naziv ugovora: "Nabavka ICT opreme i softvera za
Srpsku e-Government infrastrukturu"

FINANCED BY THE EUROPEAN UNION

Contract title: "Supply of ICT equipment and software for
Serbian e-Government infrastructure"

Q&A