

EGS-CC, not an Enterprise Ground Service but an European Ground Systems – Common Core

Nestor Mario Peccia
ESA/ESOC
1 March 2016

1. Poor synergy across Ground Systems' stakeholders and also within same Organization
2. System not designed to cover AIT-OPS life cycle
3. Existing infrastructure systems reaching end of life
4. Loss of technical knowledge
5. Budget restrictions
6. High cost of Ground SW Systems
 - a. Will the Ground System cost be higher in the future than the Space Segment or the Launcher service ?

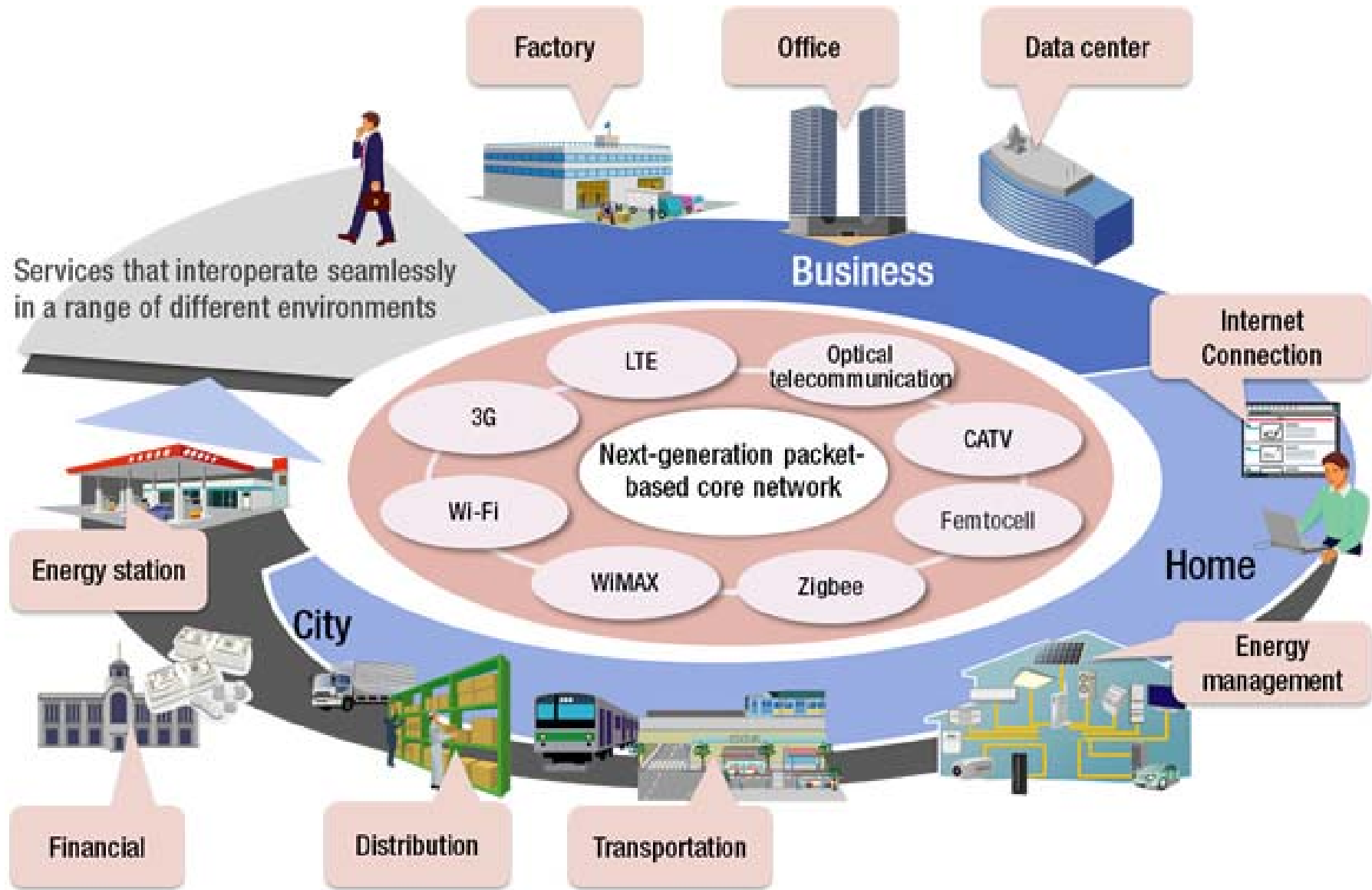


1. Increased Synergy
2. Reduced Costs
3. European Community Open Source
4. Enable modernisation of legacy systems
5. Agreed Reference Architecture
 - a. Open Architecture promoting different business models
6. Promote cross-fertilisation
7. Generic and extensible functionality
8. Component based, SOA, MBE
9. Service based FW
10. Towards Enterprise Products
11. Agile Ground SW development
12. Clear Separation between generic M&C functions (kernel) and specific features of the controlled system (adaptation layer)
13. High performance and scalability (from cubesat to Constellation)
14. Integrated Cybersecurity and secure SW development
15. Long term maintainability
 - a. Technology isolation
 - b. Full adoption of standards (CCSDS, ECSS, OMG)
 - c. Portability
 - d. Modularity

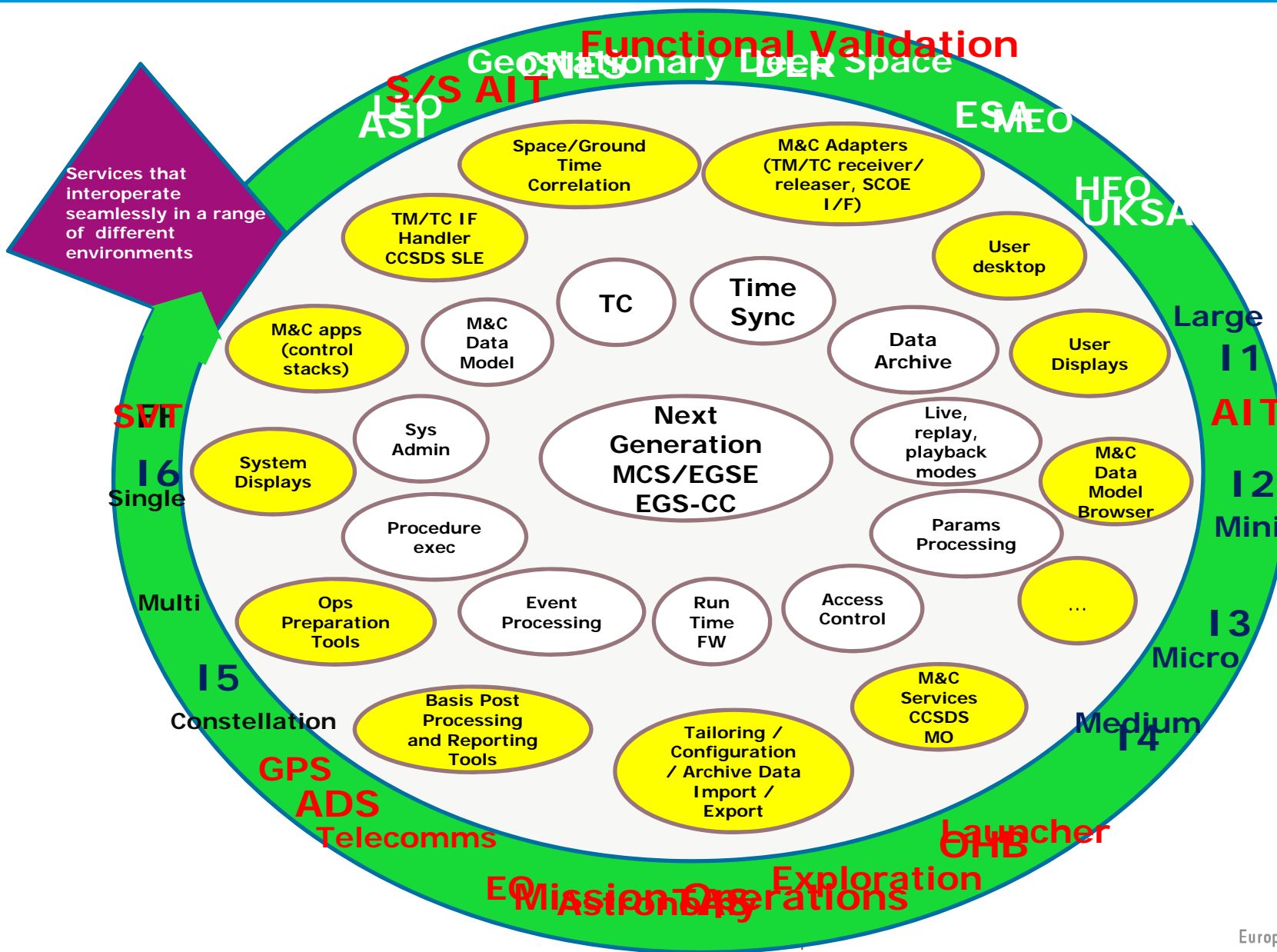


- " One size fits all" SW Infrastructure
- Agreement of many stakeholders (some of them competitors) via its CEOs
- Strong commitment to deploy the SW Infrastructure in own Product Line
- Business Model based on add-ons to the European Community Open Source Infrastructure SW

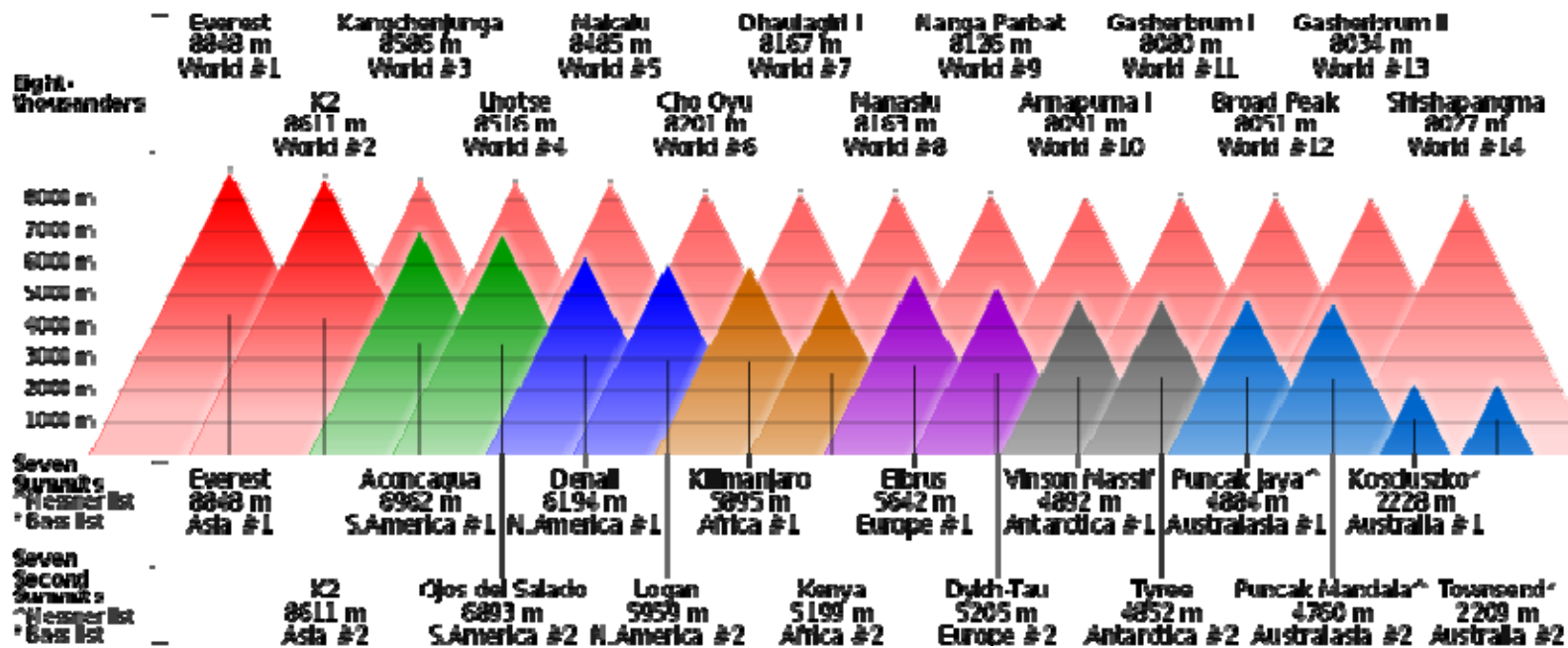
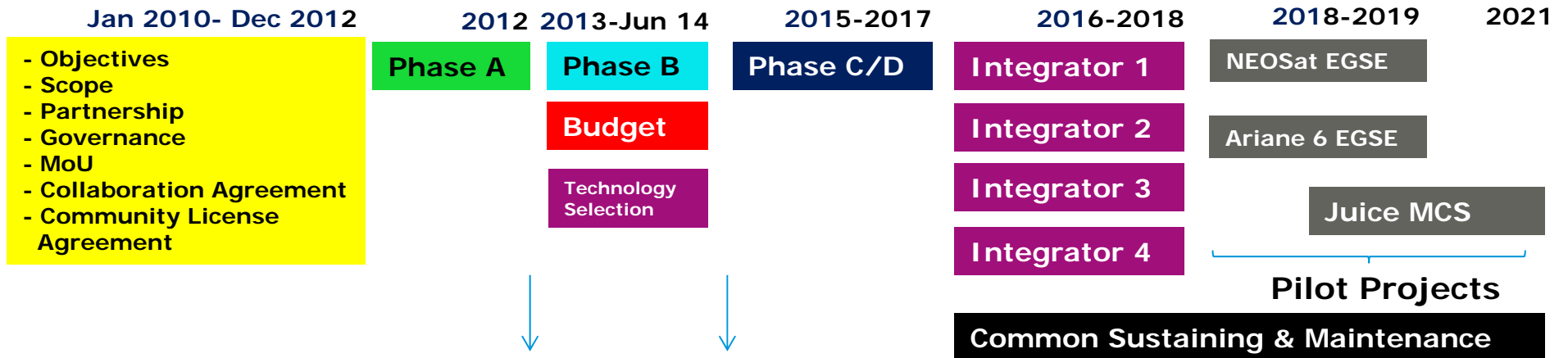
The Smart City Concept for Communications



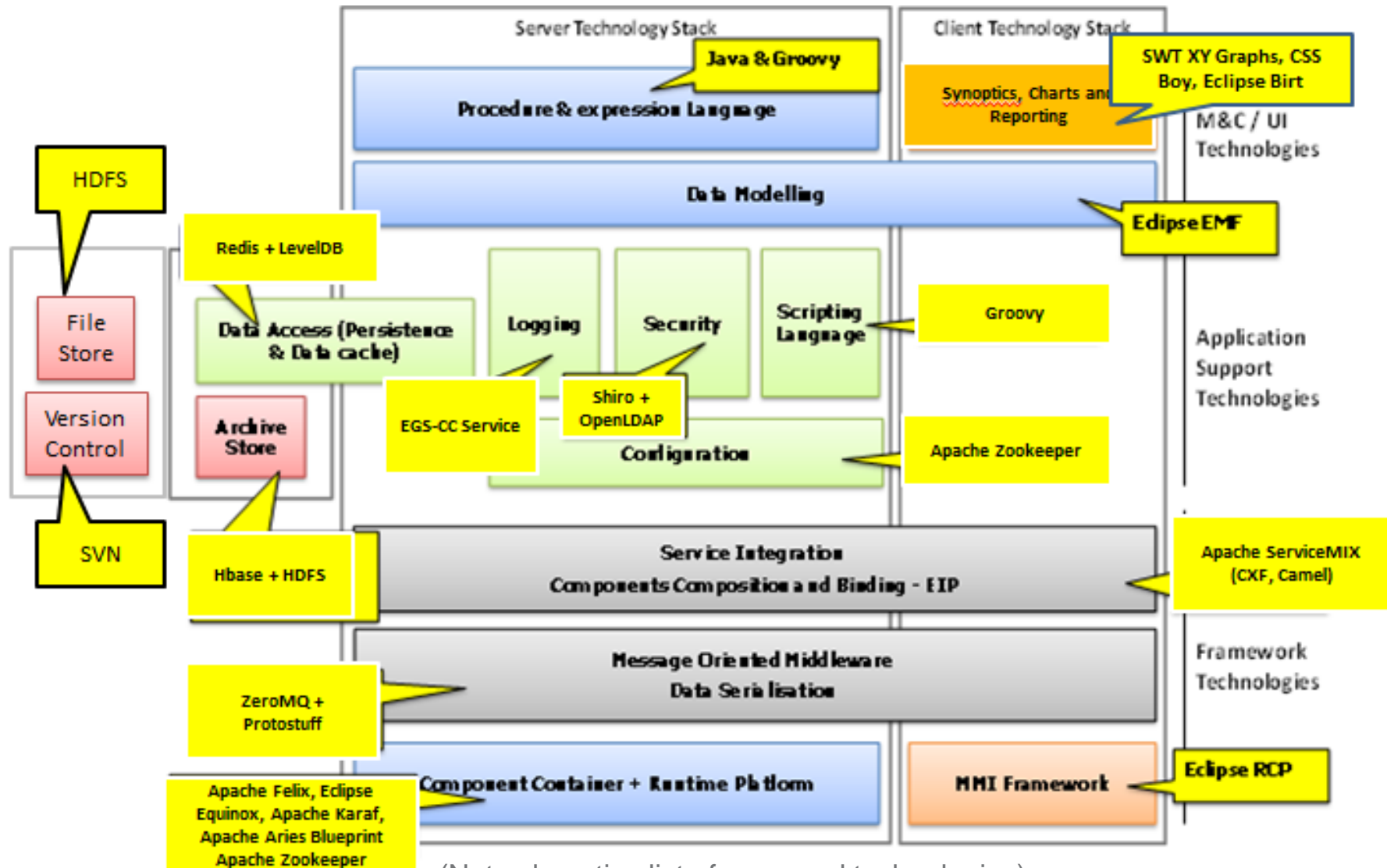
The European Solution



As difficult as climbing all 14 eight-thousanders

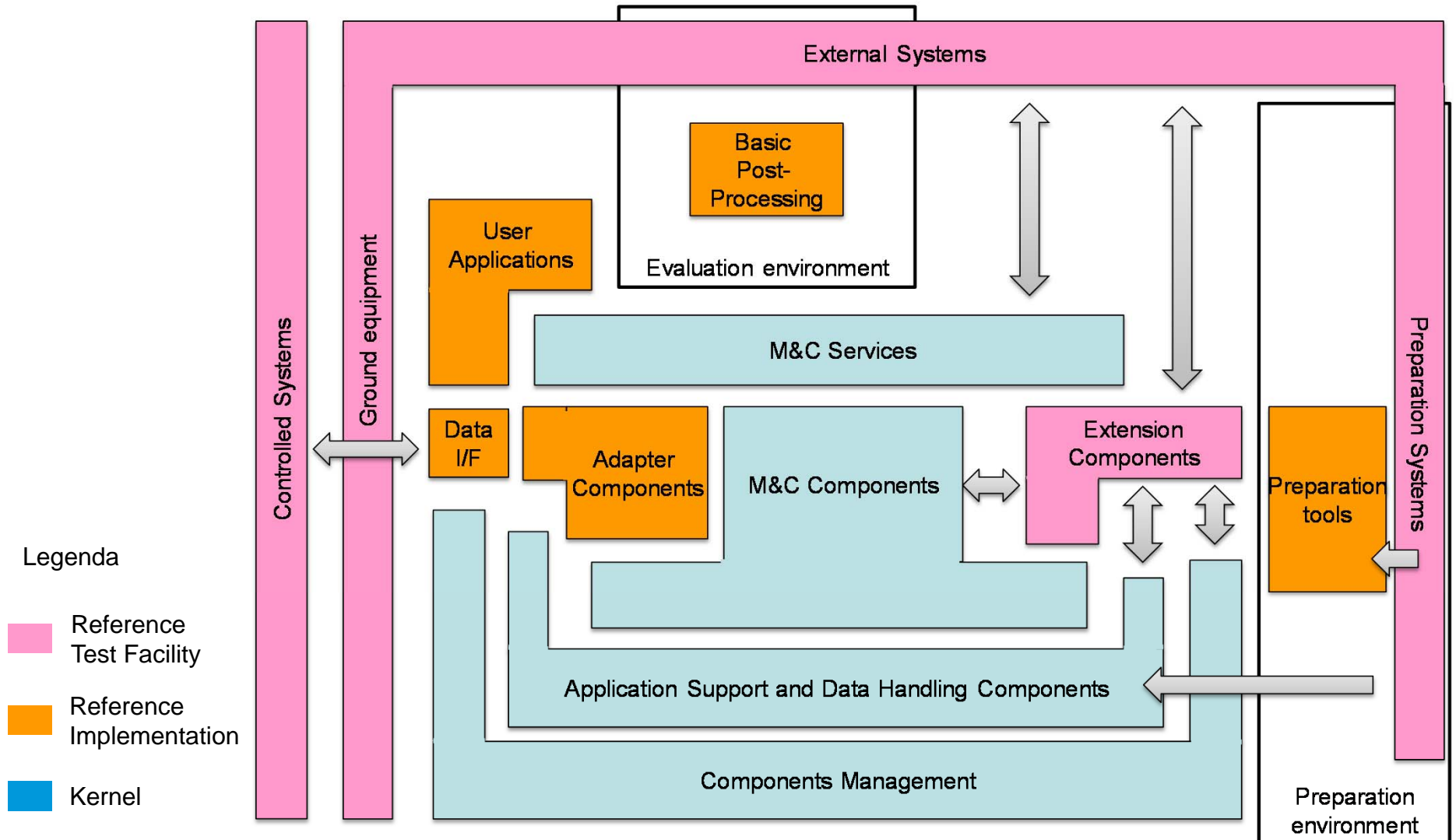


EGS-CC : The Technology Stack

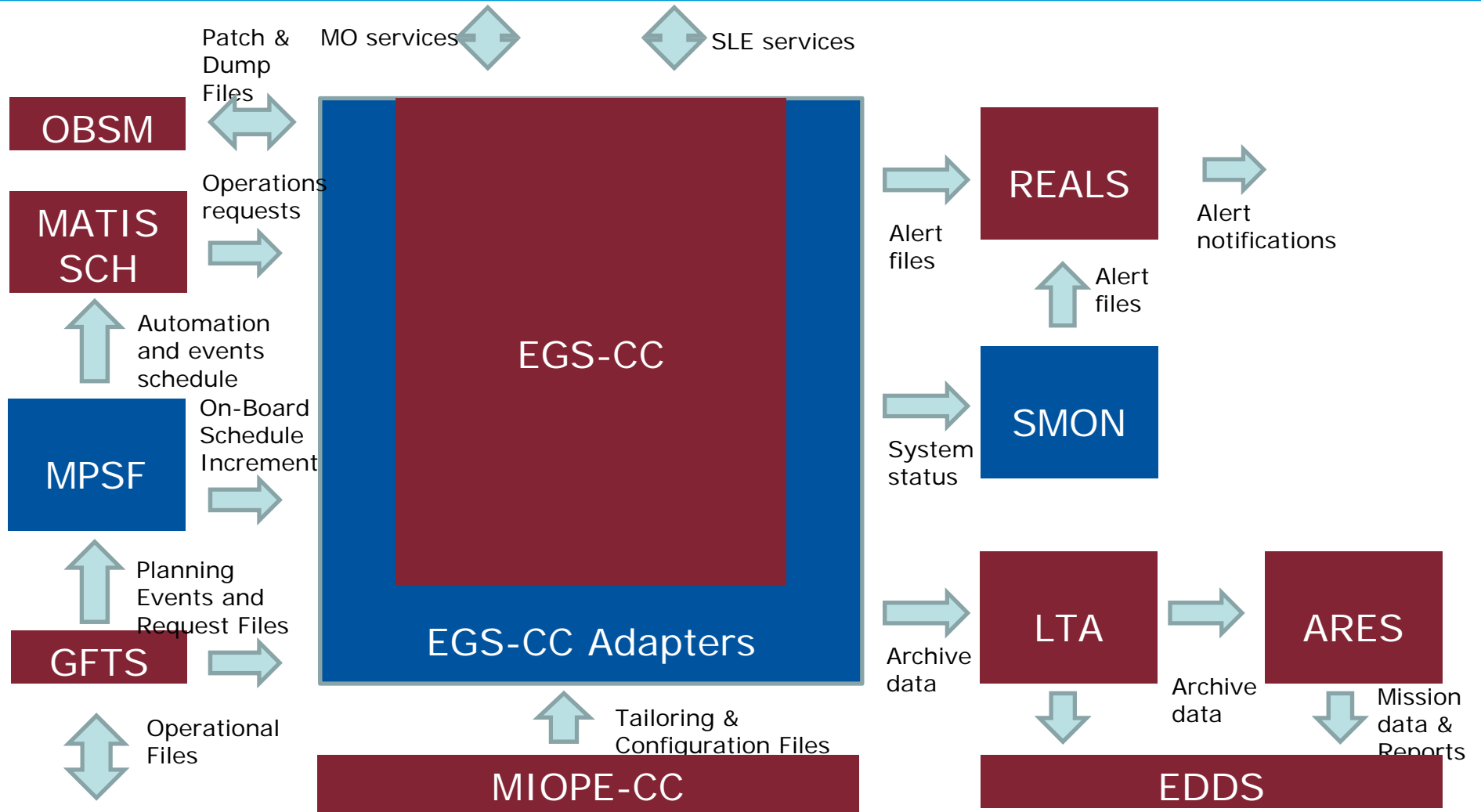


(Not exhaustive list of proposed technologies)

EGS-CC: High Level Overview



EGS-CC Integration at ESA/ESOC



OBSM OnBoard SW Management
MATIS Automation System
MPSF Mission planning System FW
GFTS Generic File Transfer System
REALS RT Alarm System

SMON System Monitoring
LTA Long Term Archive
ARES Anomaly Reporting System
EDDS Data Distribution System
MIOPE Mission Operations Preparation Environment

Year 2034 – GSAW # 38

Everything is ruled by SW, like our DNA



1. Order your MCS, being a commodity, as you do usually by ordering a pizza on-line
2. **The GYPSY app = Ground system Platform for on-line Software deliverY**
 - a. base pan kernel
 - small (cubesats) 299.99 €
 - medium (1000 -2000 kg class) 399.99 €
 - large (3000 + kg class) 499.99 €
 - Family (constellation) 799.99 €
 - b. Value components
 - CCSDS compliant mozzarella 199.99 €
 - ECSS compliant tomato 199.99 €
 - OMG compliant ham 99.99 €
 - c. each topping service (buy 4, get 1 free) 49.99 €
 - Ground Services, Full automation, self-organizer, voice, video, data compression
 - 52.99 € extra for high speed 9999.99 TB / sec links
 - Self healing for 499.99 €
 - On-the-fly data crunching for 199.99 €
 - d. Minimum delivery order 1000 €, delivery to your cloud 9.99 €
 - e. direct voice command to your satellite (99.99 €) only available at selected stores
3. Operator books via voice its virtual “Dedicated Control Room” (your hands in your pocket)
4. Operator deploys via voice its complete MCS and its configuration. No monolithic G/S.
5. Operation via telepresence (remote spacon can be anywhere)
 - a. Brand new: Rent your robo-spacon 500 €/ month
 - Additional AI functions 200 €/ month