



**Dual Use Methodology
to reduce the
Risk of Obsolescence of Complex Systems**

Use of the S3000L for the Optimization of Projects in order to Reduce the Risk of Obsolescence of Complex Systems





Not wishing to do anyone any harm, the example is complex system far from a weapon system



Smart Cities



Since the 2° World War, the Integrated Logistic Support Engineering (ILS) faces the degradation and obsolescence of Complex Systems, in the life cycle span.

Today, ILS can be successfully applied to the challenges of the Smart Cities, being a **dual use** theme

SeTeL operates in this sector since 1973, has managed more than 120 complex systems and feels itself qualified for new challenges



Smart city technology is continuously enhanced, consequently the city is subject to a fast obsolescence.

New towns run the risk to become, in a short time, an example of industrial archeology.

Smart City Maintenance

Maintaining and updating the systems during its lifecycle is a big challenge

Smart City Life Cycle Management





Obsolescence

How many ways the obsolescence can be expressed

- Technically, it is not a failure but it causes a functional failure
- it influences the availability through the chain: Maintainability -
Absence of spare - non-reproducibility of the spare
- It affects the reliability of the SW that today tends to replace the previous version by superimposing the new one, in an uncontrolled and uncontrollable way. The spare is not lacking but the support or its management.
- Furthermore, obsolescence is often desired (controlled obsolescence)
- often necessary to resolve a previous bug
- The problem is made complex by the chaotic sum of SWs loaded on the systems, increasingly dependent on COTS and COTS SW each with its own policy

Obsolescence: an example

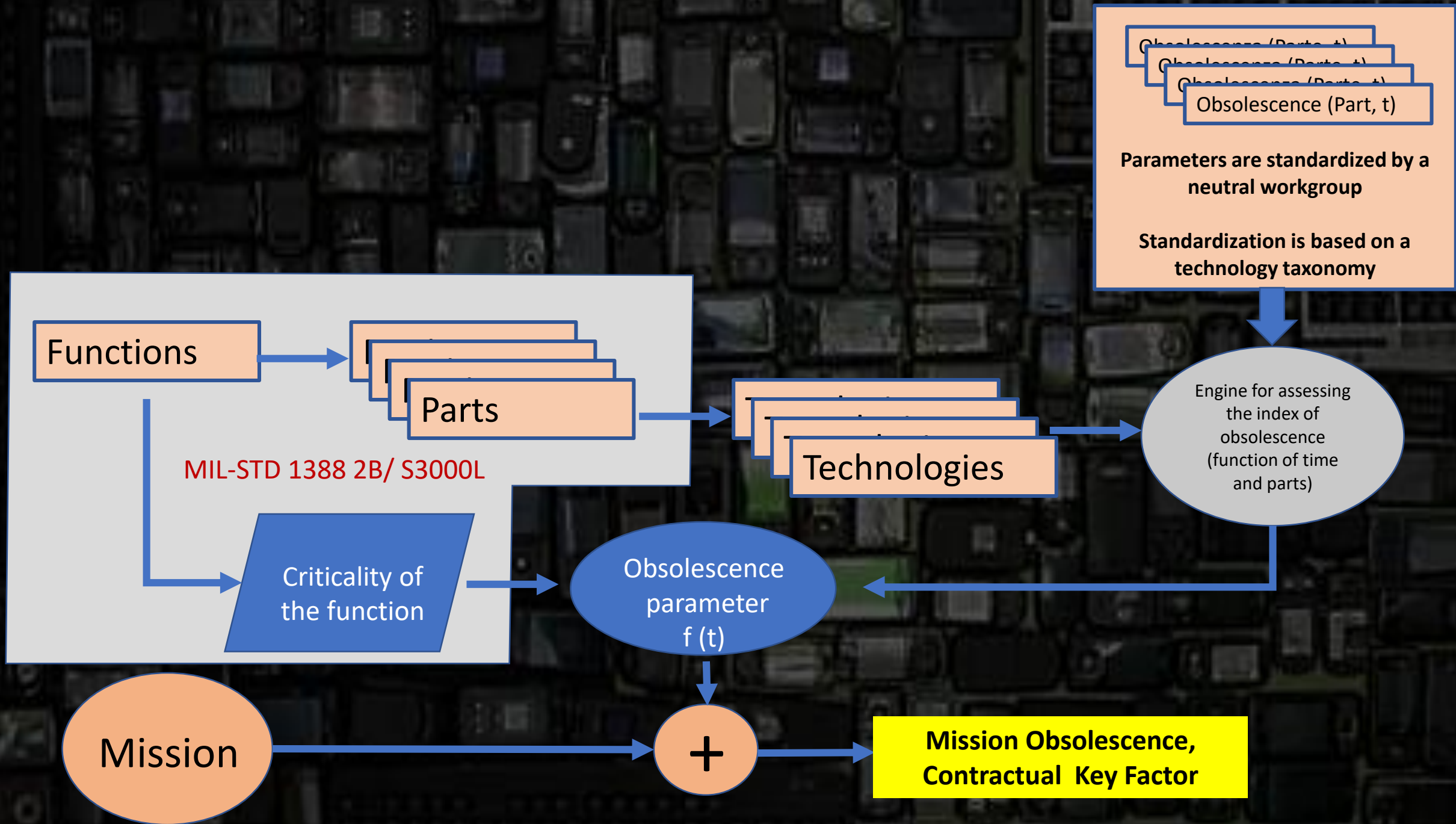
In a hypothetical «Smart» IoT 4.0 building you have to go through 10 doors to enter or exit a building, each door is controlled by a device that allows it to be opened and closed, the various doors are not totally standardized, they have their life and their settings.

An IoT device often does not work or is temporarily blocked for updates (think of your mobile phone. We assume it is available at 95%. Now if you line up the 10 doors, once in two, do not go out or enter the house and if you go out it is not said that you return.

In smart cities the theme (not perceived) is frighteningly critical because we tend to use only the edge of technology, and not established systems; This without taking into account the additional factor of cyber crime

Obsolescence: a new approach

- In this context and with these premises we have conceived, and partially prototyped, a method for contractually managing this to drive it in the contractual phase and to control it in the life span
- It was necessary to identify a method based on neutral parameters that could be standardized and integrated with existing aerospace technologies of the logistic support engineering
- The method identified and prototyped is the following :



SeTeL

La 3000



Example 1

Smart Cities vs..

Huge Ships Life Cycle Management



Example 2

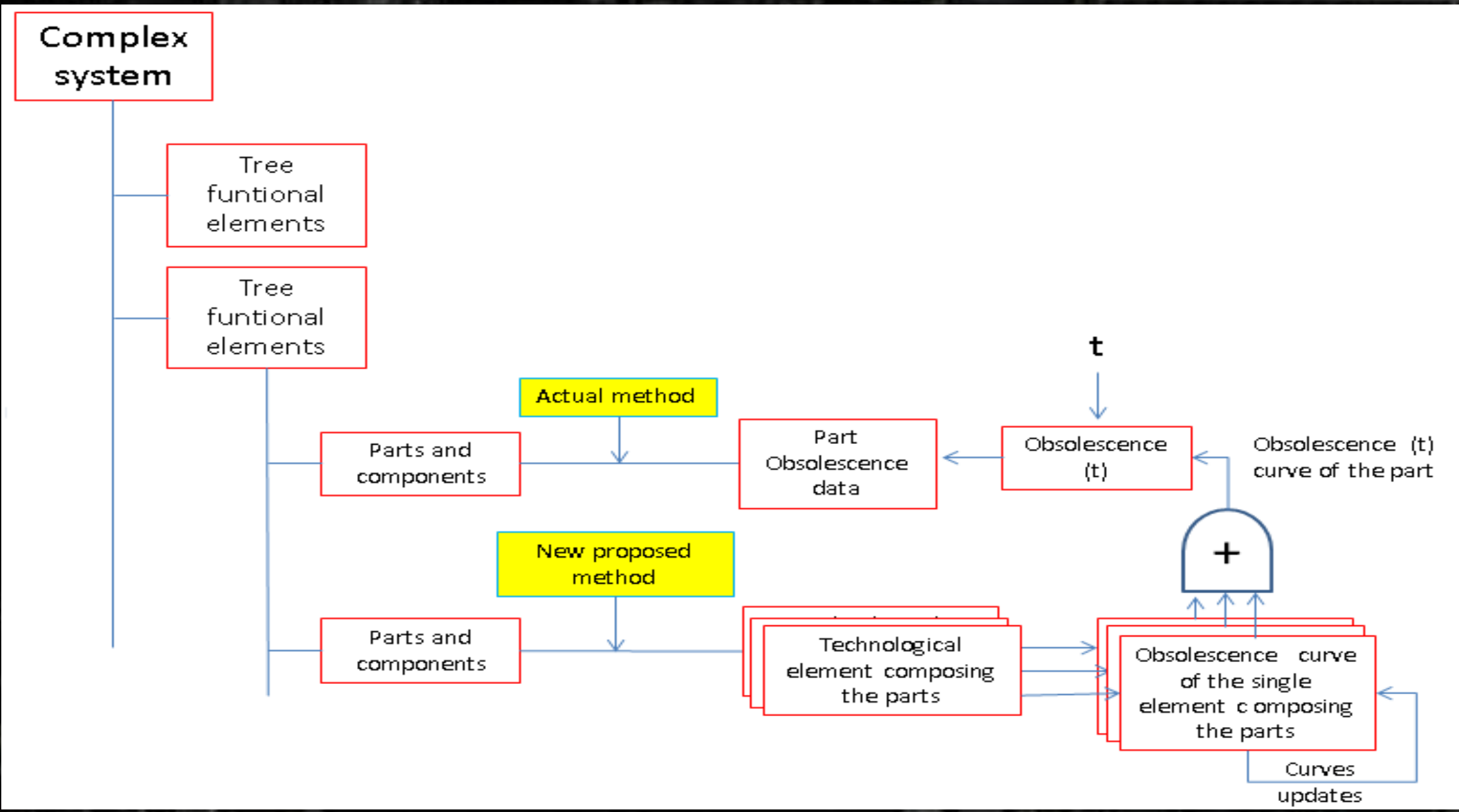
Smart Cities vs.. Transportation Life Cycle Management

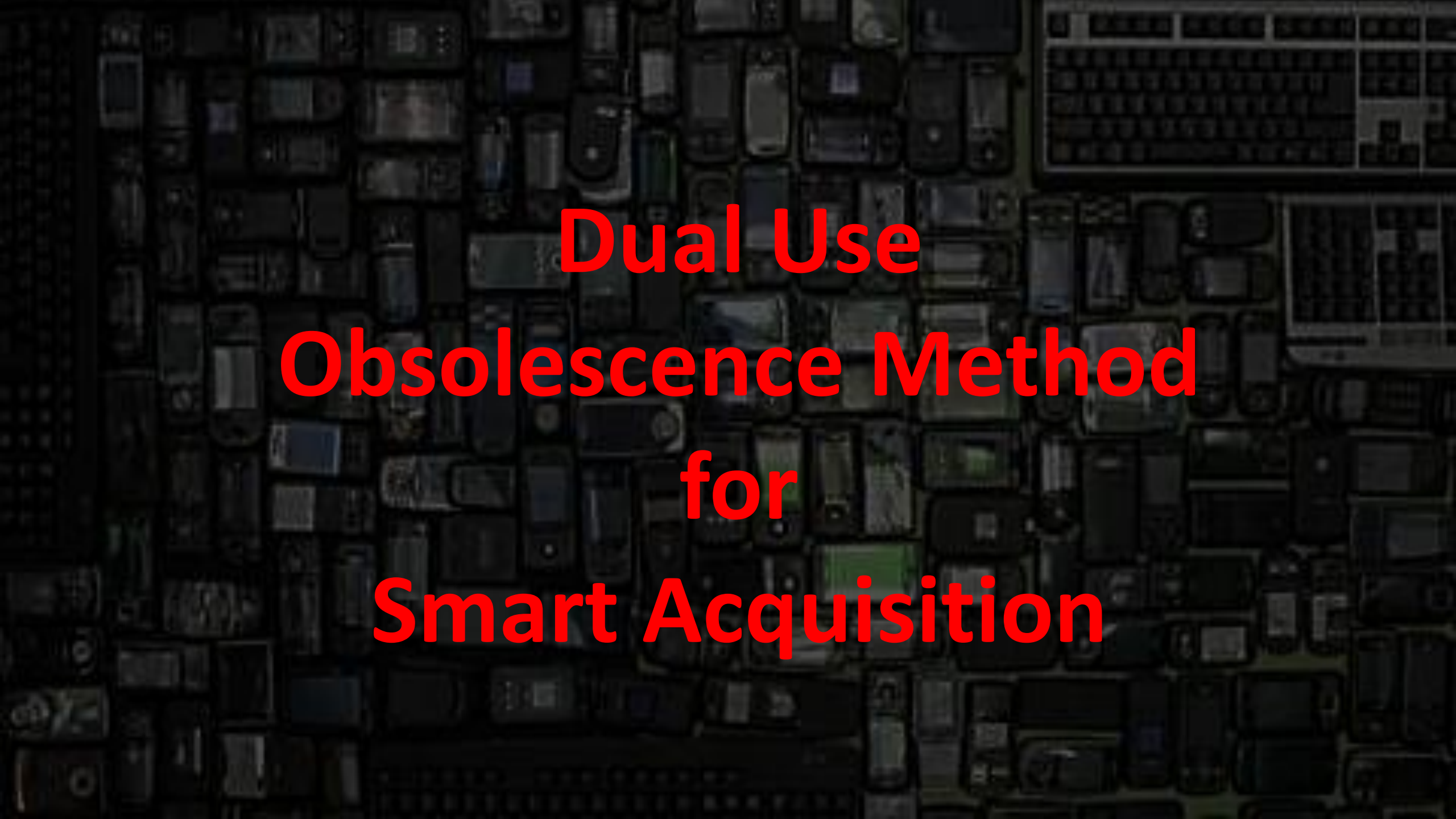


Example 3

Smart Cities vs..

Communications Life Cycle Management





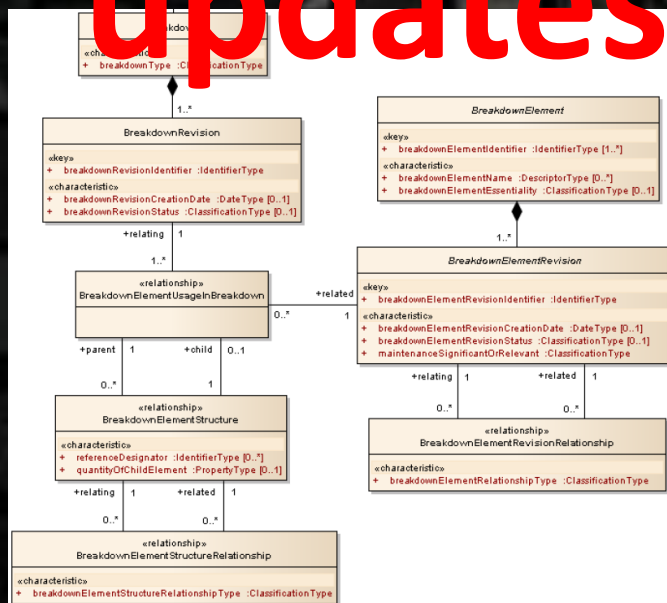
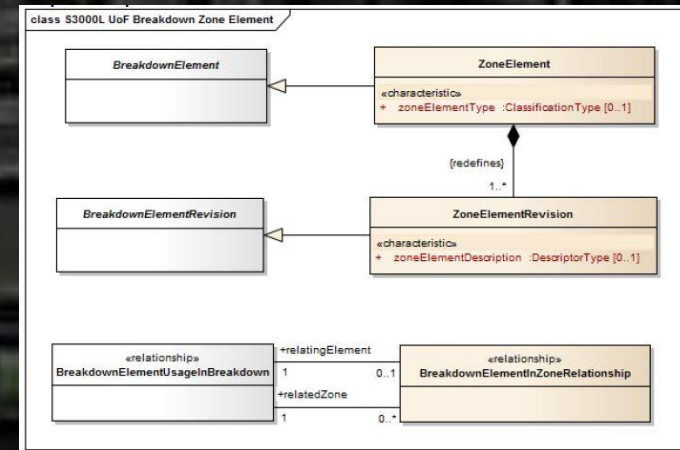
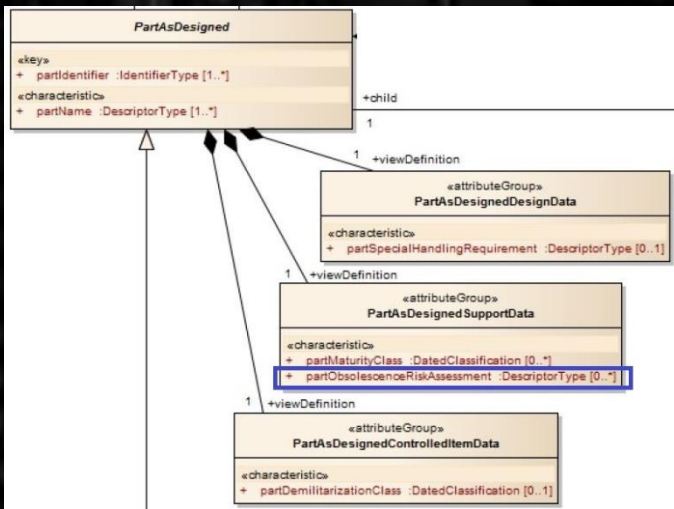
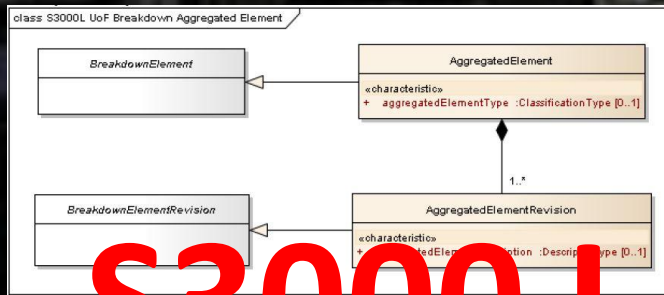
**Dual Use
Obsolescence Method
for
Smart Acquisition**

Obsolescence: Conclusions

- The parameter we obtain is the probability of maintaining availability as a function of obsolescence
- One can rely on various taxonomies. ACARE is the most indicated.
- The new standard ASD3000L which renews the consolidated MIL-STD-13882B is suitable for the management of the identified model
- SeTeL, which identified an opportunity in the ASD, developed a model outlined in the general lines of the article.

S3000 L

Data Model updates



Performance Availability Cost

Obsolescence analysis Design life cycles as a function of the cost

Governance

Healthcare

Traffic Management

Electric Vehicle Charging Structure

Geo Fencing and Asset Tracking

Tolling and Congestion Charging

Integrated Mobility Management

- Massini System
- ERES Cabinet 1
- ERES Cabinet 2
- ERES Cabinet 3
- Scenario Simulator
- VMIC 1
- VMIC 2
- IRIG-B
- COST PC
- Scenario Simulator

Table	Title
AA	Operations and Maintenance Requirements
AB	War Peace Operations and Maintenance Requirement
AC	Maintenance Level Requirement
AD	Organizational Level Requirement
AE	Skill Operations and Maintenance Requirement
AF	War Peace Additional Requirements Narrative
AG	Reliability Requirement
BA	Reliability, Availability, and Maintainability Characteristics
BB	Reliability, Availability, and Maintainability Characteristics Narrative
BC	Reliability, Availability, and Maintainability Logistic Considerations
BD	Reliability, Availability, and Maintainability Indicator Characteristics

LDB SeTeL - LISA VERSION - MAINTAINABILITY Dev.

LISA

Logistic Integrated Support Analyzer



Grazie

An illustration of two hands shaking, with the word 'Grazie' written in a red, cursive font across the hands.

1973 - 2013

GRUPPO
SeTeL

Backup/Restore

Import PBS/LBS

LSA Functions

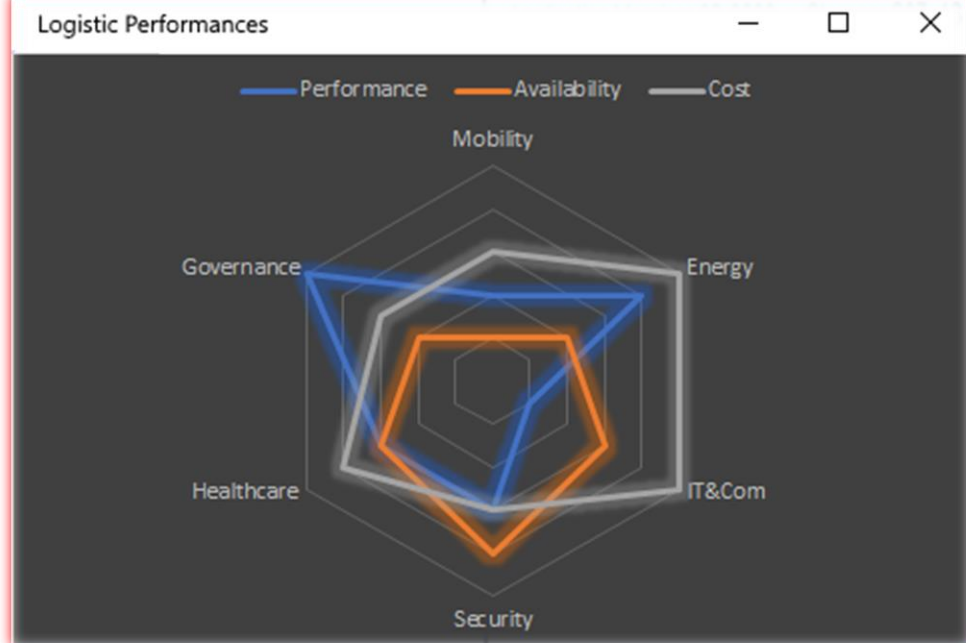
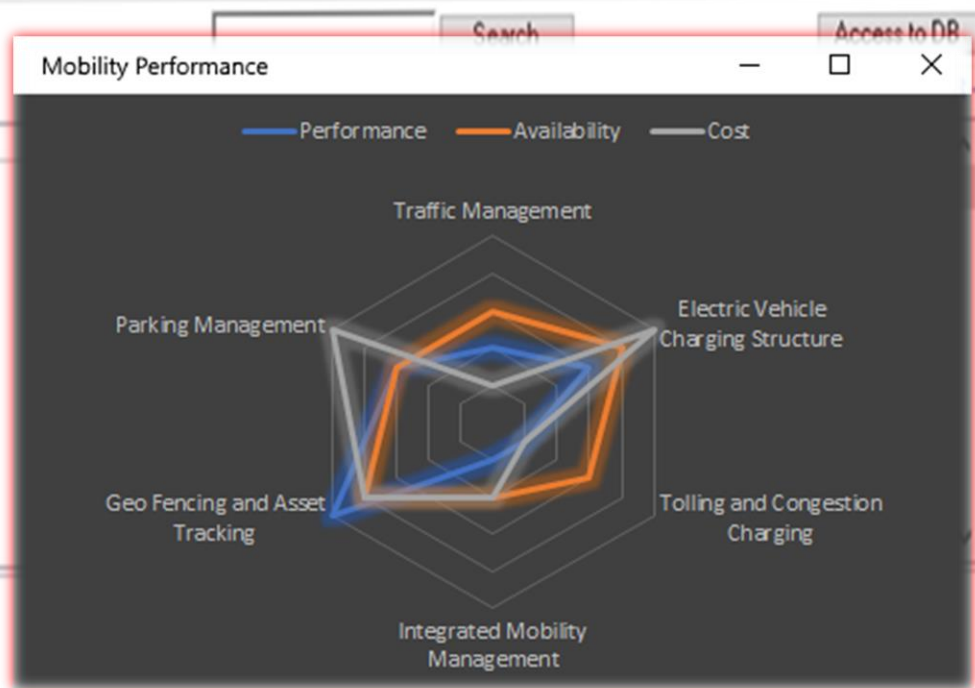
Utilities

Show Reports

- Utility View DED 199 - LCN
 - ERES-00 [S] ERES Cassini System
 - ERES-00 [S01] ERES Cabinet 1
 - ERES-00 [S02] ERES Cabinet 2
 - ERES-00 [S03] ERES Cabinet 3
 - ERES-00 [S04] Scenario Simulator
 - ERES-00 [S0401] VMIC 1
 - ERES-00 [S0402] VMIC 2
 - ERES-00 [S0403] IRIG-B
 - ERES-00 [S0404] COST PC
 - ERES-00 [S05] Scenario Simulator

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LISA
 Logistic Integrated Support Analyzer
 S3000 SMART CITIES beta 2

Criticità del tema: Esempio

In un ipotetico edificio «Smart» IoT 4.0 per entrare o uscire da un edificio dovete attraversare 10 porte, ogni porta è controllata da un dispositivo che ne permette l'apertura e la chiusura, le varie porte non sono totalmente standardizzate, hanno la loro vita ed i loro settings.

Un dispositivo IoT spesso non funziona o si blocca temporaneamente per aggiornamenti (pensate al vs telefonino. Assumiamo che sia disponibile al 95 %. Ora se mettete in fila le 10 porte, una volta su due, non uscite o non entrate in casa e se uscite non è detto che rientrate.

Nelle smart city il tema (non percepito) è spaventosamente critico perché si tende ad usare solo l'ultimo strillo della tecnologia, e non sistemi consolidati; Questo senza tener conto dell'ulteriore fattore della cyber criminalità

How many ways the obsolescence can be expressed

- Non è un guasto in se ma provoca un guasto funzionale
- Tecnicamente influisce sulla disponibilità operativa tramite la catena: Manutenibilità – Assenza di spare – non riproducibilità della spare
- Influisce sull'affidabilità del SW che tende oggi ad sostituire la versione precedente sovrapponendo la nuova, in modo incontrollato ed incontrollabile. Non manca la spare ma il supporto o la sua gestione.
- L'obsolescenza, inoltre, è spesso voluta (obsolescenza controllata)
- spesso necessaria per risolvere un baco precedente
- Il problema è reso complesso dalla somma caotica dei sw caricati sui sistemi, sempre più dipendenti dai COTS e dai COTS SW ognuno con la sua politica