Identification of the installation/facility :

Country:	Italy
Location (city):	Capua (CE)
Name of the facility:	Large Aerospace Structures Impact Laboratory (LISA)
Date of construction:	2002
Owner:	Italian Aerospace Research Center (CIRA)
Contact point:	Ing. Umberto Mercurio (tel. +39 0823 623355, u.mercurio@cira.it)
Internet site:	www.cira.it

Technical characteristics:

1 - Type of infrastructure

Wind tunnel	☐
Propulsion bench	☐
Structures facility	■
Material facility	☐
Simulator (ex. Flight simulator, tower, …)	☐
Flight test bed (aircraft, embedded facilities, …)	☐
Supercomputers	☐
Other	☐

2 - Main technical characteristics

The Aerospace Structures Impact Laboratory (LISA) is the world's largest aerospace laboratory for open-air crash tests. It is composed of 3 test machines: Large Structure Crash Testing Equipment, Ditching/Emergency Landing Facility, Drop Test Tower.

Large impact machine for impact testing on large aerospace structures:

- Test article weight up to 20 Tons
- Max release velocity before impact: 20 m/s
- Three impact surfaces: soft, solid and water
- Trajectory angle: between 5° and 90°

The **large impact machine** has also a system based on slides to permit ditching / emergency tests on scaled down models weighing up 1 ton at a speed of 30 m/s.

3 - Research domains which can be addressed (refer to ACARE taxonomy
http://www.acare4europe.com/sites/acare4europe.org/files/document/ASD-Annex-final-211004-out-asd.pdf)

AIRCRAFT Sector
What follows is structured in terms of Taxonomy Area -> Doman - Technology

2. Aerostructures
   a. Metallic Materials and basic processes
   b. Non-Metallic Materials and basic processes
   c. Composite Materials and basic processes
4. Aircraft Avionics, Systems & Equipment

p. Fire Protection Systems

6. Integrated Design & Validation (methods & tools)
   b. Flight/Ground Tests

4 - Main (or specific) associated measurement techniques

- Accelerations and loads on human body in crash conditions using anthropomorphic dummies ATD, Class Hybrid II and FAA Hybrid III
- High speed cameras

5 - Operational status

Fully operational

6 - Pictures

Figure 1: General view of the facility with the 3 impact surfaces (soft, solid and water)

Figure 2: View of the large impact machine

Figure 3: Full scale helicopter crash and ditching test

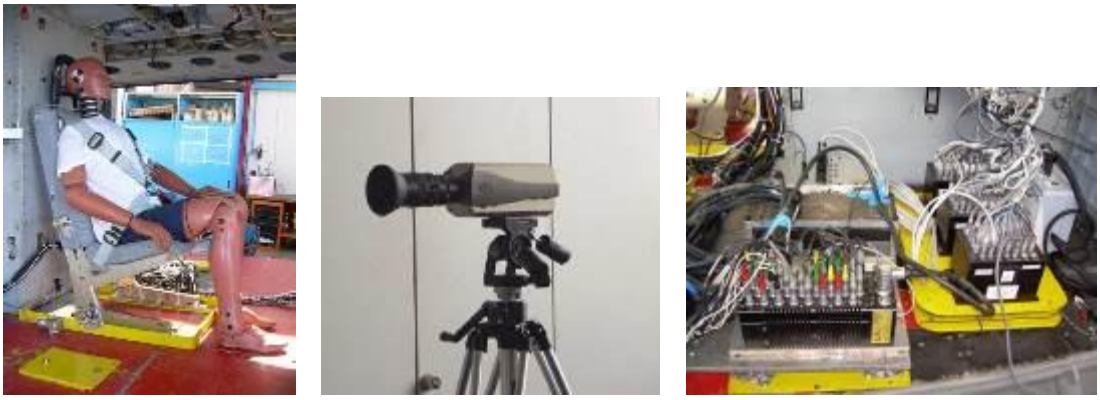

Fig. 4 LISA instrumentation (anthropomorphic test dummies, high speed cameras, data acquisition system

Financial elements:

Replacement cost (M€uros)

Less than 10	☐
10 to 30	■
30 to 60	☐
60 to 100	☐
More than 100	☐

Practices concerning:

Access policy: contract or purchase order

Support: national

Comments:

Further information is available on:
http://www.cira.it/en/impianti-en/lisa-laboratorio-impatto-strutture-aerospaziali
http://www.youtube.com/watch?v=Rq0qq6tjb68

Origin of information ('signature'): author and date

Ing. Umberto Mercurio June 2014