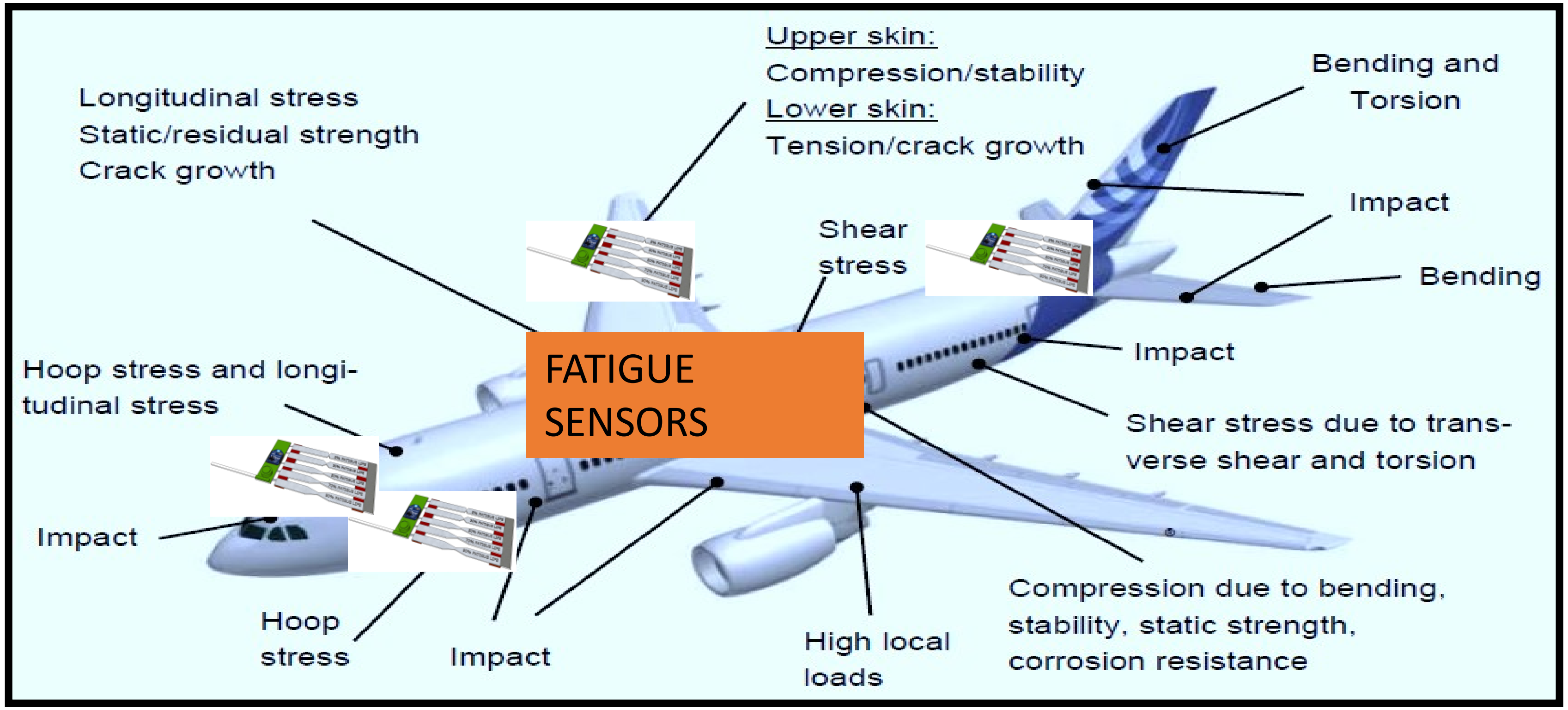
A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor
and
Wireless SHM-RFID-IoT Smart Fatigue Damage SENSOR NETWORK
and
An Internet of Things-IoT Based Intelligent Predictive Maintenance Management System

(FOR AIRCRAFT APPLICATIONS)

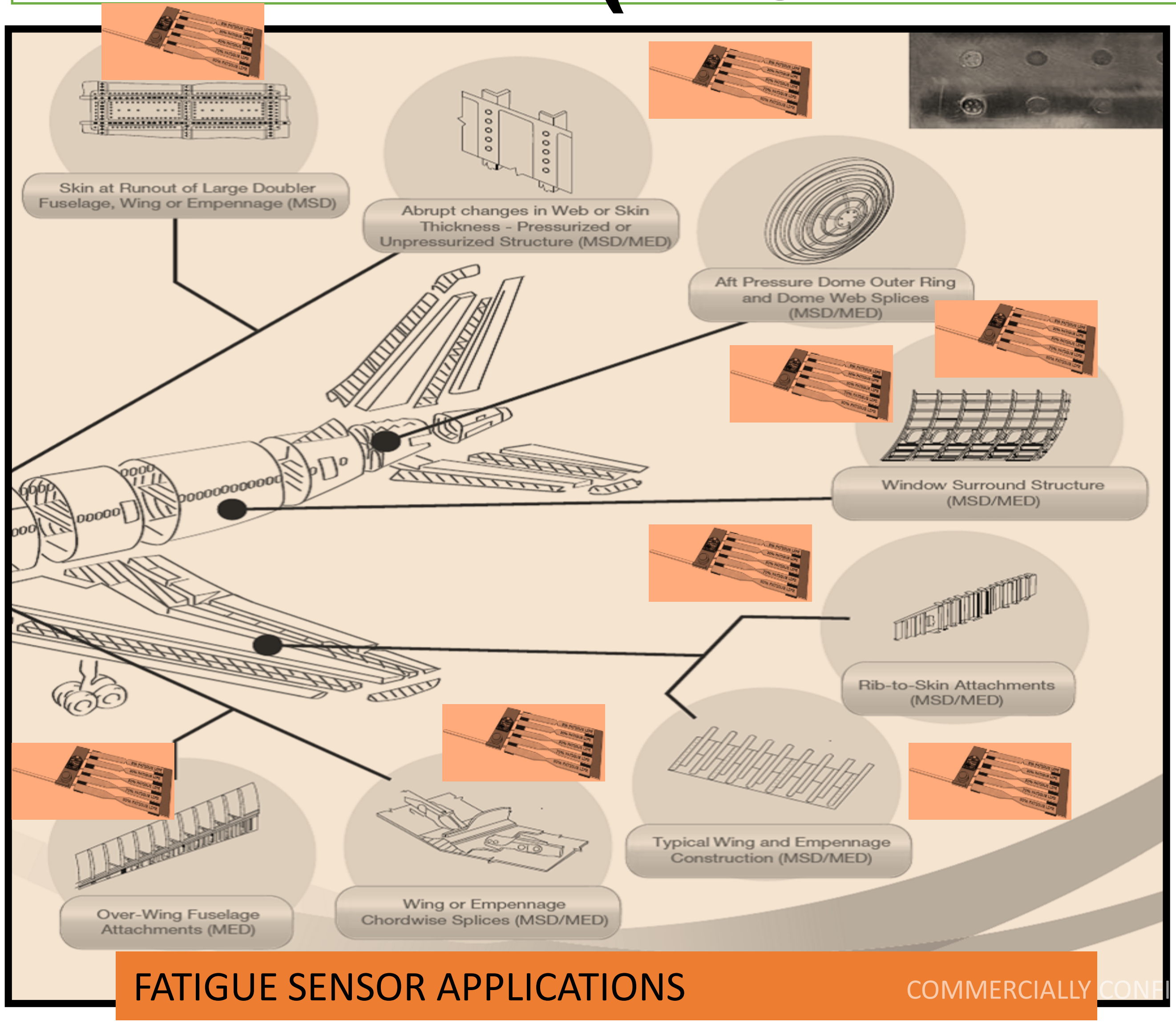
A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor
(AIRCRAFT APPLICATIONS)



FATIGUE SENSOR APPLICATIONS

STRUCTURAL FATIGUE DAMAGE MONITORING of different components of AIRCRAFT SYSTEMS (body frames or fatigue specific-sensitive elements) during normal service.

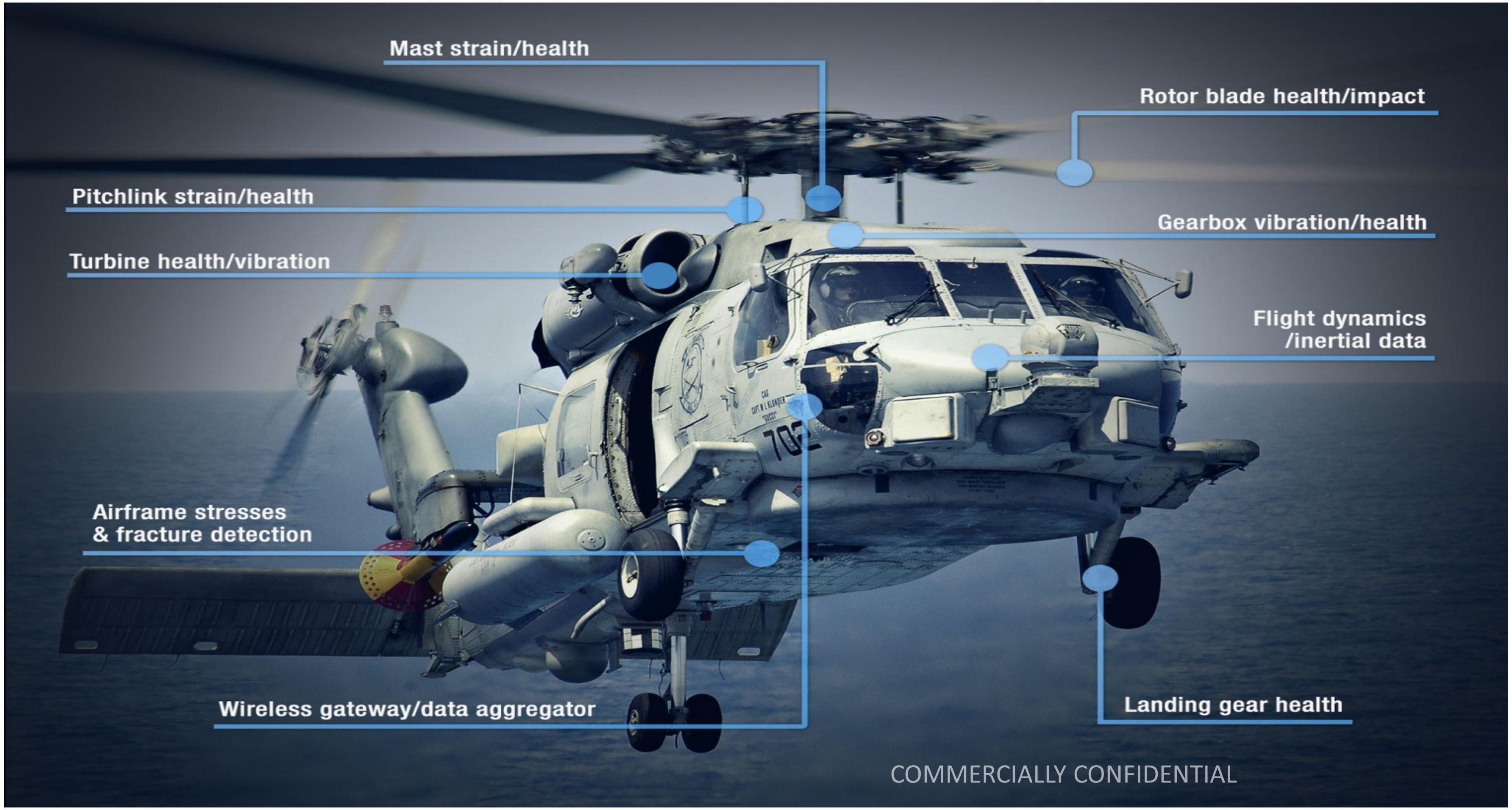
A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor (AIRCRAFT APPLICATIONS)



Identify all the Fatigue Critical HOT SPOTS in STRUCTURES for the applications of Smart fatigue damage sensors in order to monitor the RESIDUAL FATIGUE STRENGTH or Fatigue Lifetime. Specific and Fatigue sensitive regions, locations under high loads, predetermined and formerly known-experienced spots on the structures and mechanical components such as Riveted, Bolted and Hole Type Connections etc..

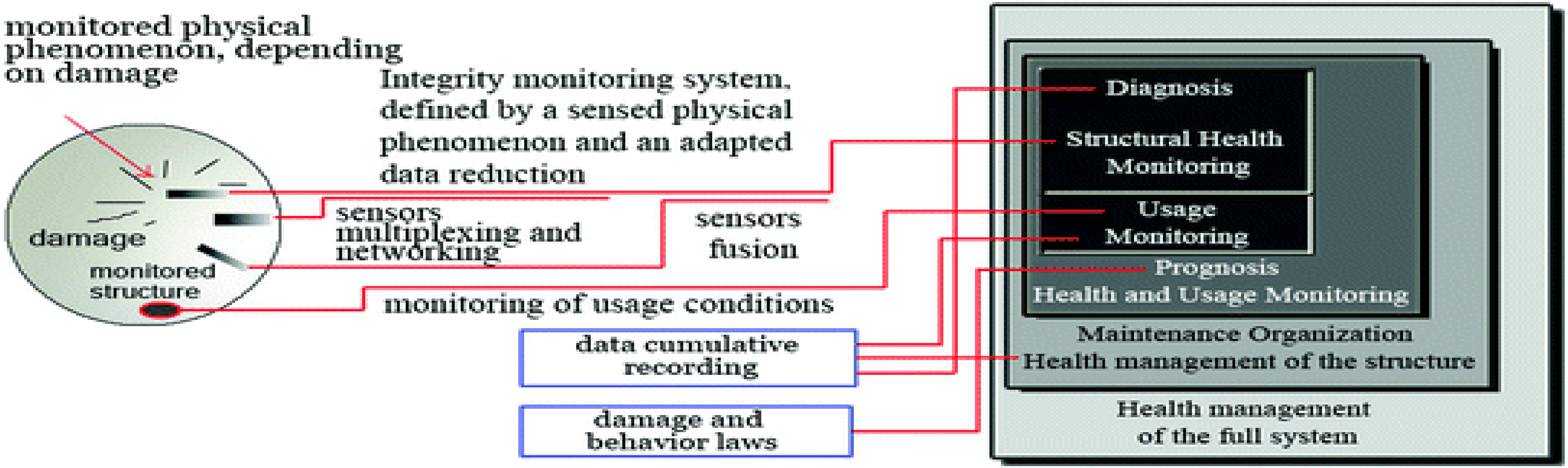
Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor Network

(WIRELESS FATIGUE DAMAGE SENSOR NETWORK FOR INTELLIGENT STRUCTURAL HEALTH MONITORING, MAINTENANCE AND DESIGN)



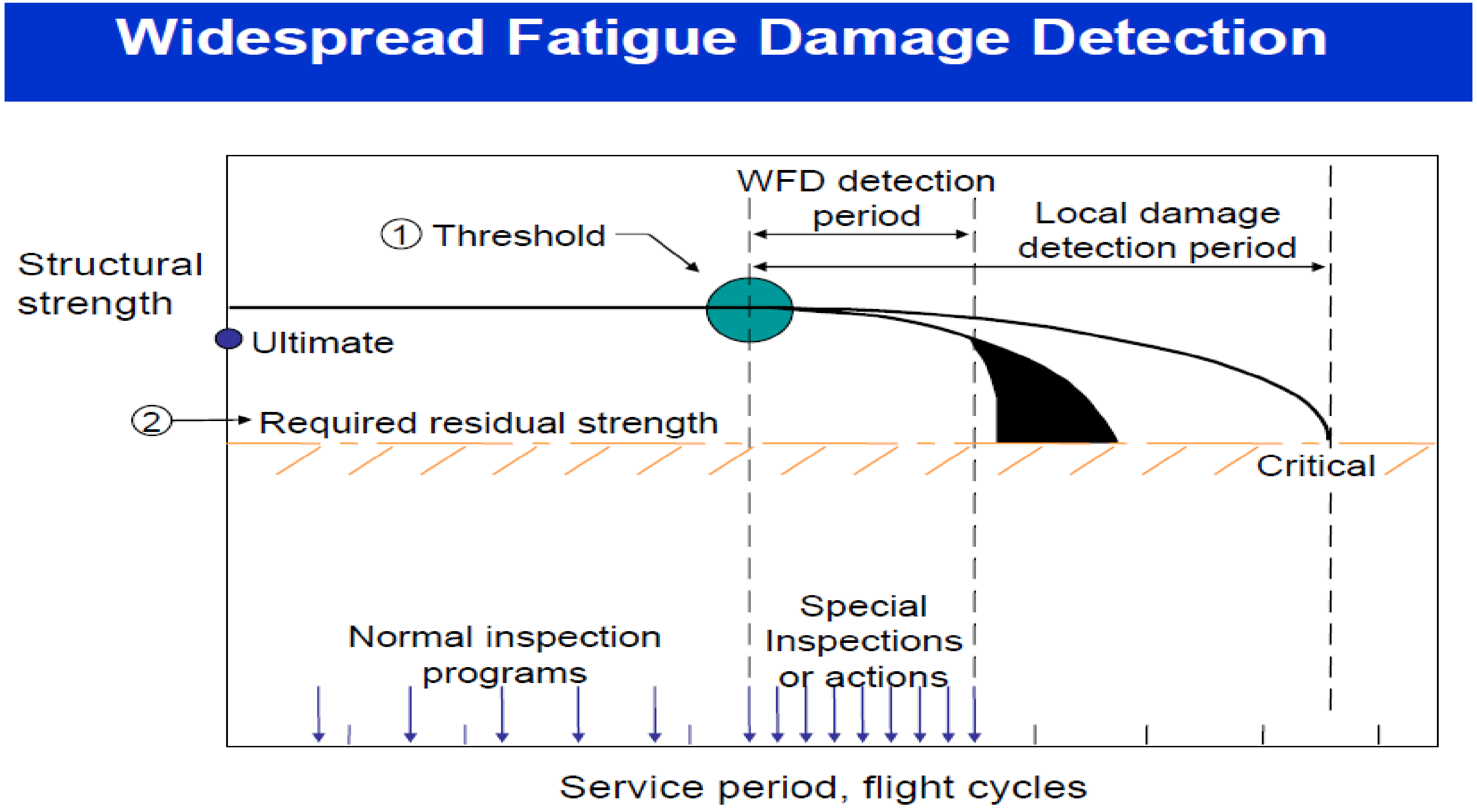
Fatigue sensitive regions, locations under high loads, predetermined and formerly known-experienced spots on the structures and mechanical components such as WELDED Connections etc..

A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor
(AIRCRAFT APPLICATIONS)



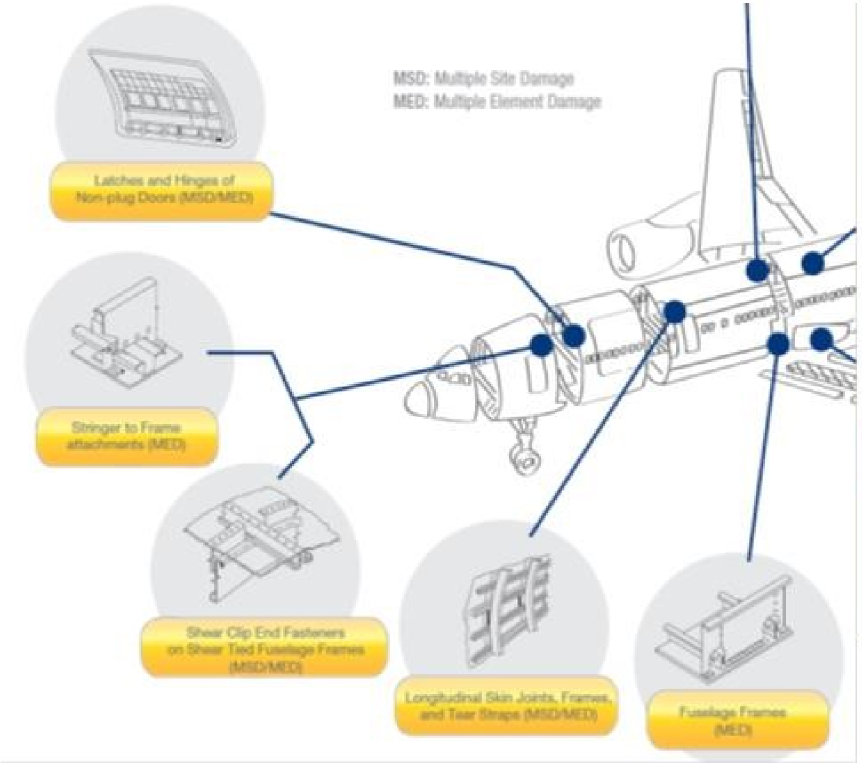
A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor and SHM STRUCTURAL HEALTH MONITORING OF AIRCRAFTS

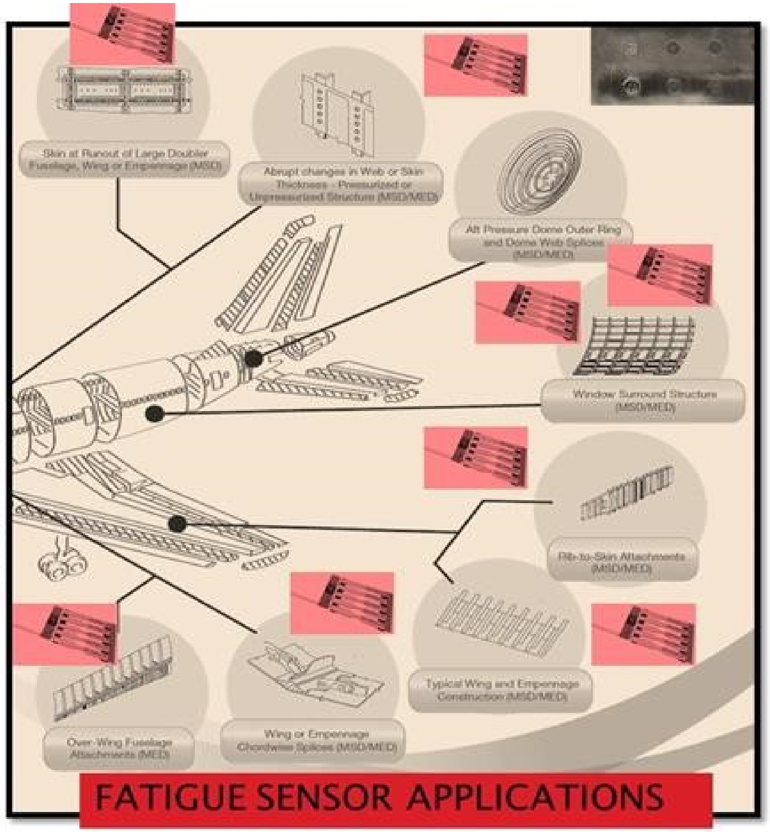
A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor (AIRCRAFT APPLICATIONS)



STRUCTURAL FATIGUE DAMAGE MONITORING AND FATIGUE DAMAGE DETECTION of different components of AIRCRAFT SYSTEMS (body frames or fatigue specific-sensitive elements) during normal service.

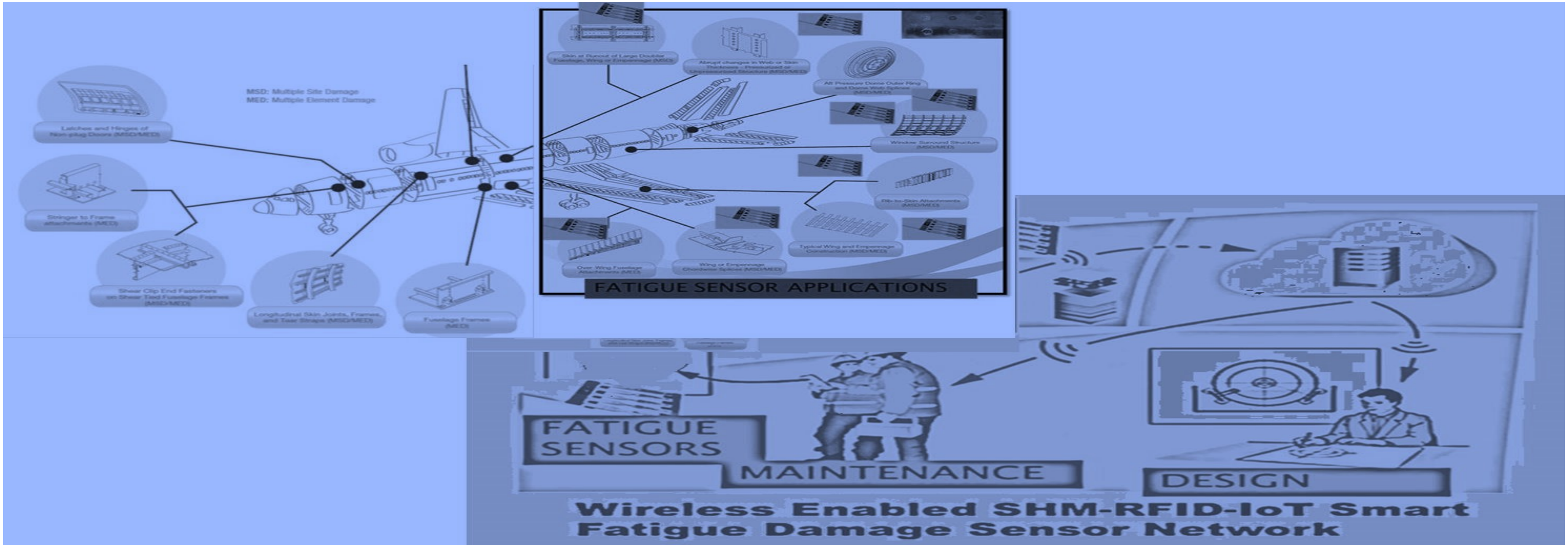
A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor
(AIRCRAFT APPLICATIONS)





WIRELESS STRUCTURAL FATIGUE DAMAGE MONITORING AND FATIGUE DAMAGE DETECTION of different components of AIRCRAFT SYSTEMS (body frames or fatigue specific-sensitive elements) during normal service.

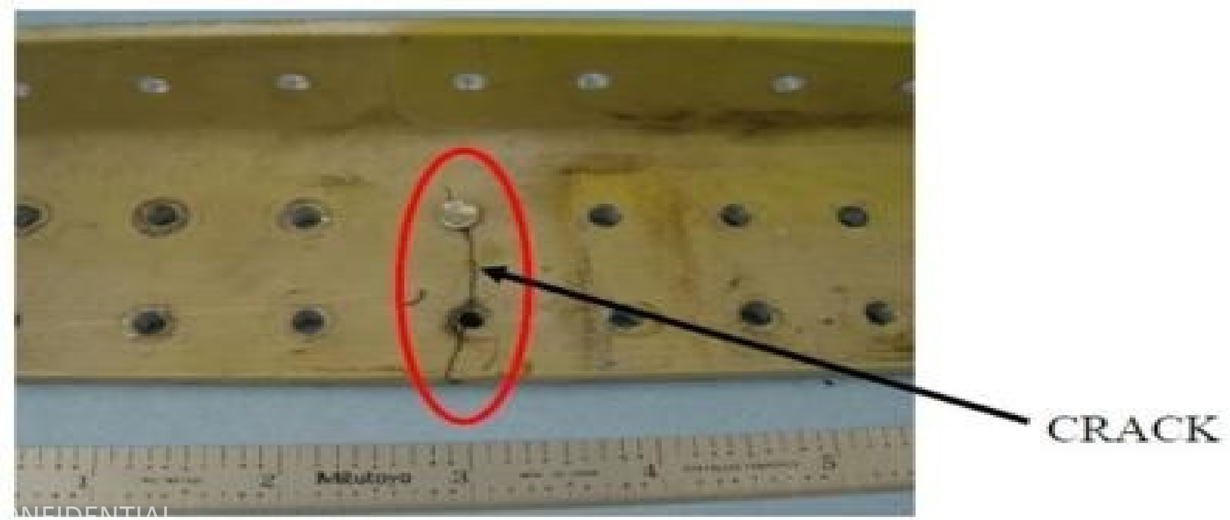
A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor
(AIRCRAFT APPLICATIONS)



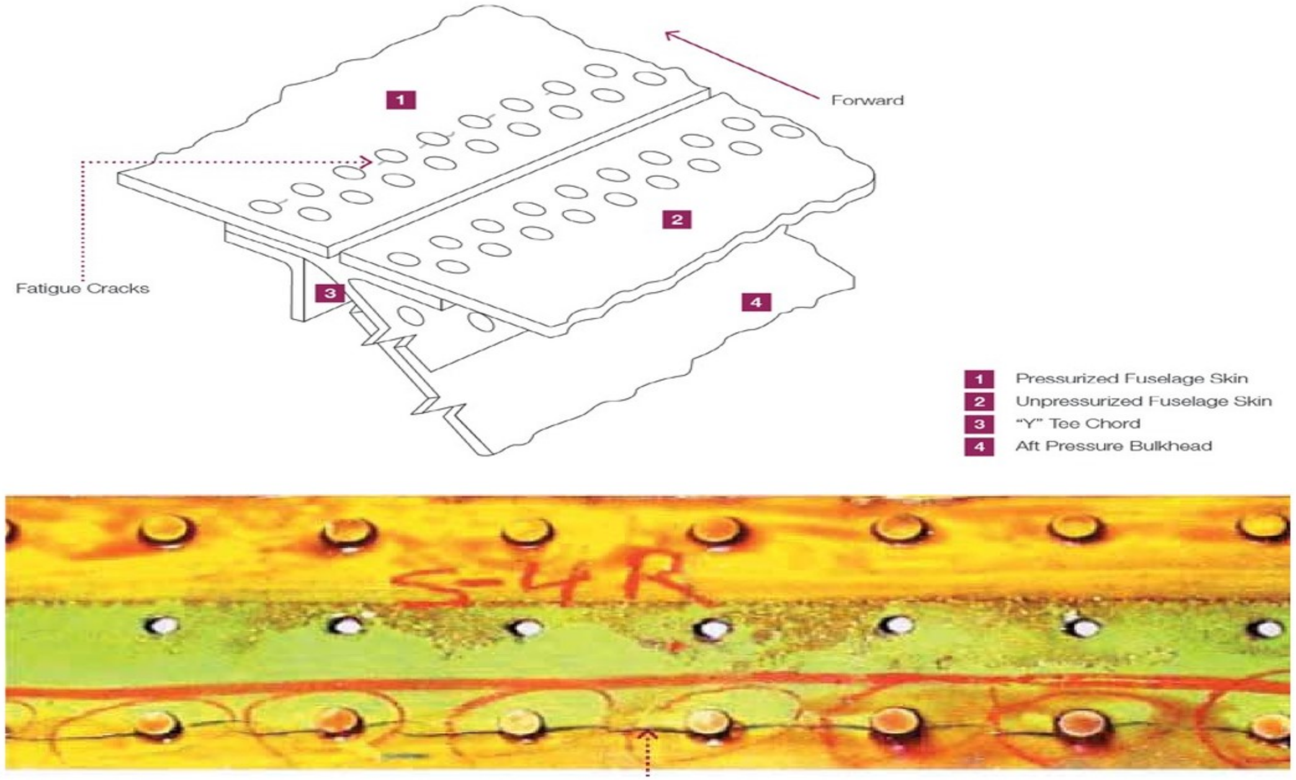
WIRELESS STRUCTURAL FATIGUE DAMAGE MONITORING AND FATIGUE DAMAGE DETECTION-SYSTEM MODEL (AIRCRAFT)

A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor
(AIRCRAFT APPLICATIONS)

Fatigue sensitive regions, locations under high loads, predetermined and formerly known-experienced spots on the structures and mechanical components such as Riveted, Bolted and Hole Type Connections etc..

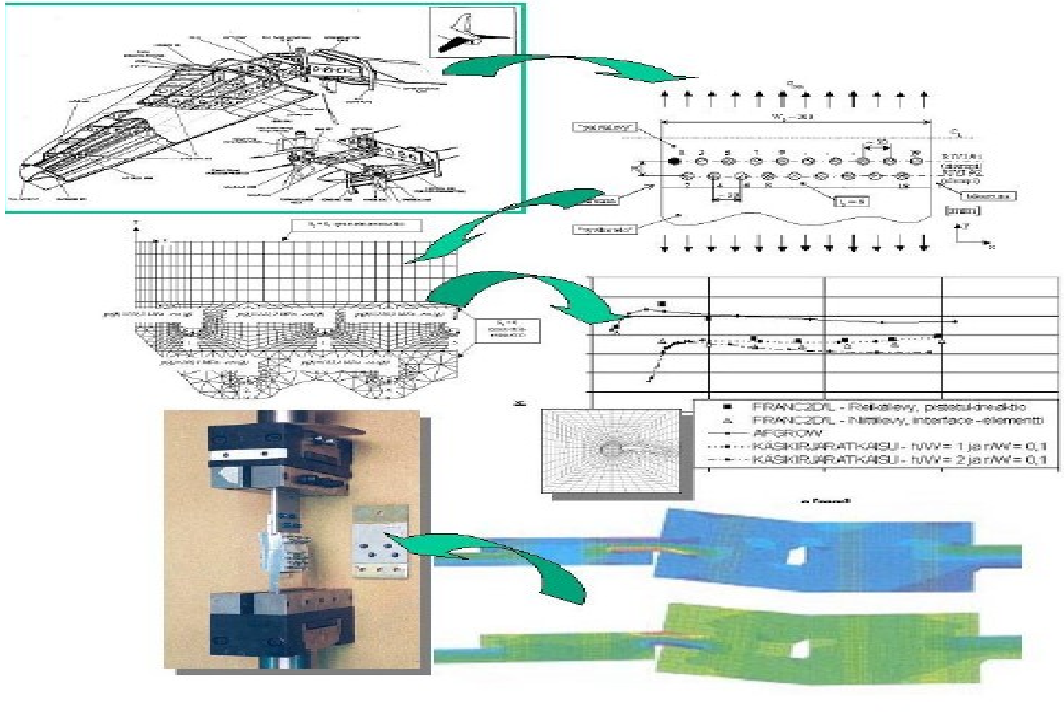


A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor
(AIRCRAFT APPLICATIONS)



(a)

(b)

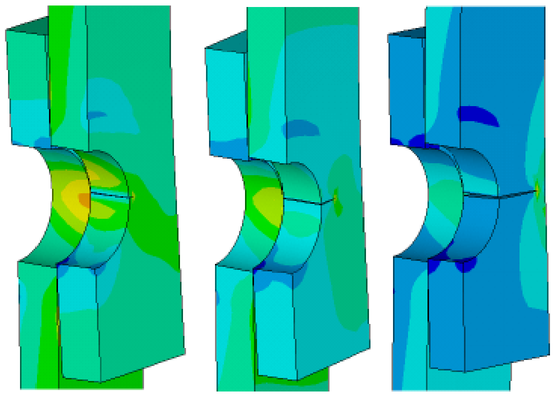


igure 12. A schematic of the Hawk tailplane (upper left) and its detail (upper right) for VTT's fracture mechanics analyses: An element model of the detail (center left), estimated stress intensity factor (K) values as the function of the distance from the hole edge using various solutions, e.g. [Harter 2000; FRANC2D/L] (lower right). The simplified fatigue test specimen of the tailplane butt strap tested by HUT/LLS (bottom left), which was analyzed by PFA (bottom right).

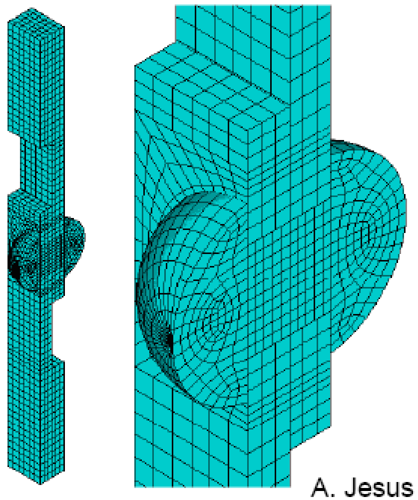
Fatigue sensitive regions, locations under high loads, predetermined and formerly known-experienced spots on the structures and mechanical components such as Riveted, Bolted and Hole Type Connections etc..

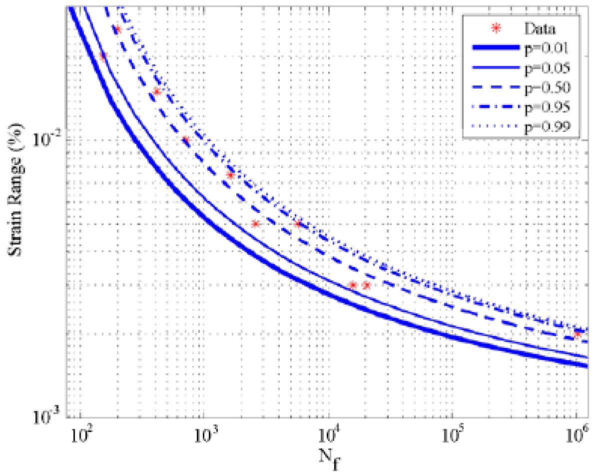
A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor (AIRCRAFT APPLICATIONS)

- Local Approaches base on Fracture Mechanics or based of S-N of ε-N curves of plain material may be used as a true alternative.
- Local Approaches requires detailed stress analysis of riveted joints.

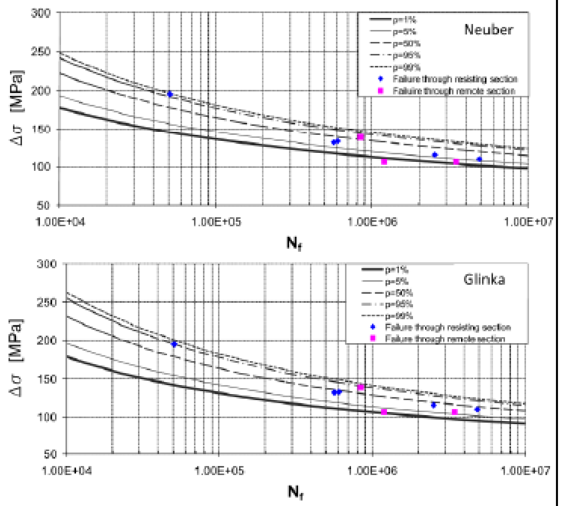


J. Correia & A. Jesus, 7ICSB - SteelBridges, 2008.



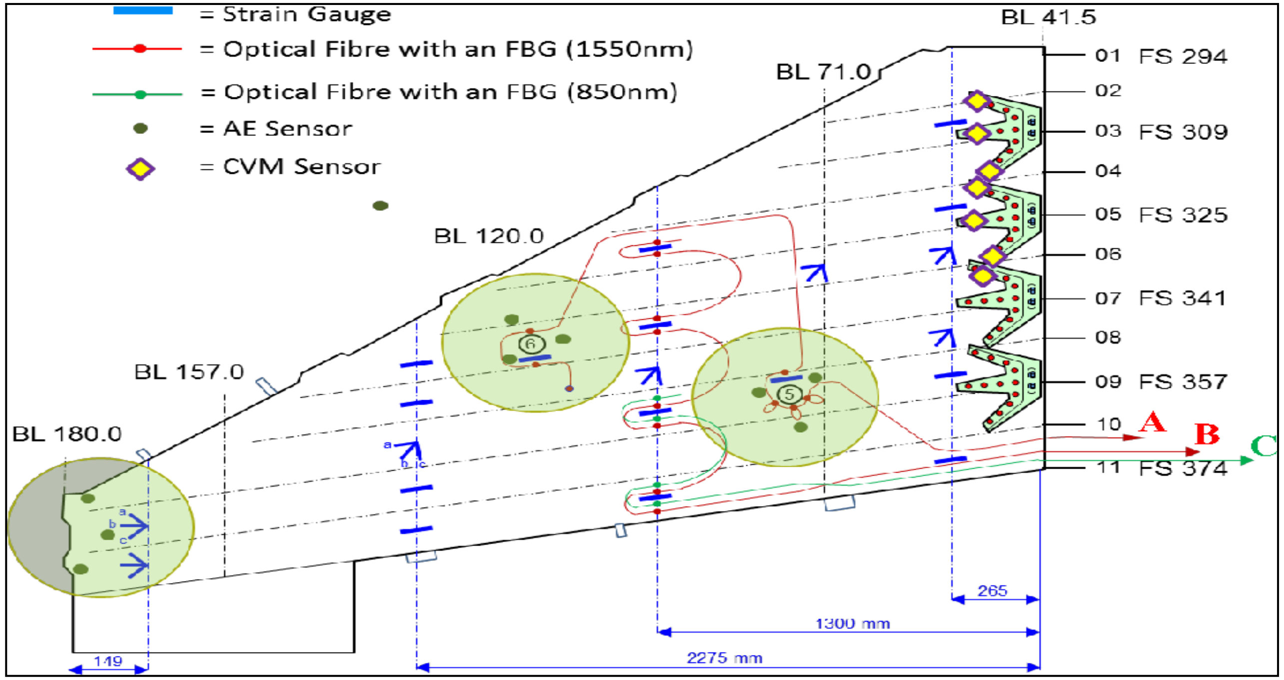


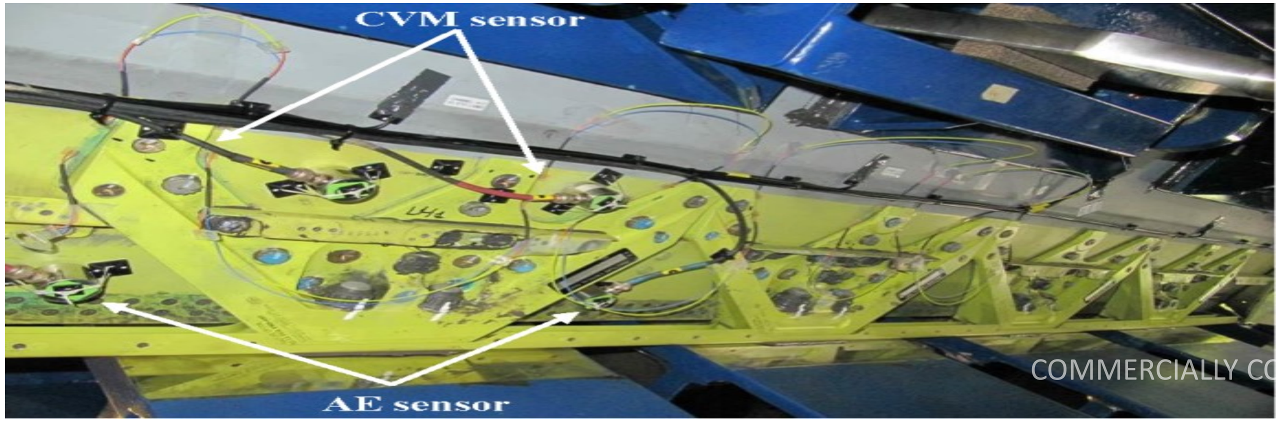
A. Jesus *et al.*, Int. J.of Fatigue, 2010.



Fatigue sensitive regions, locations under high loads, predetermined and formerly known-experienced spots on the structures and mechanical components such as Riveted, Bolted and Hole Type Connections etc..

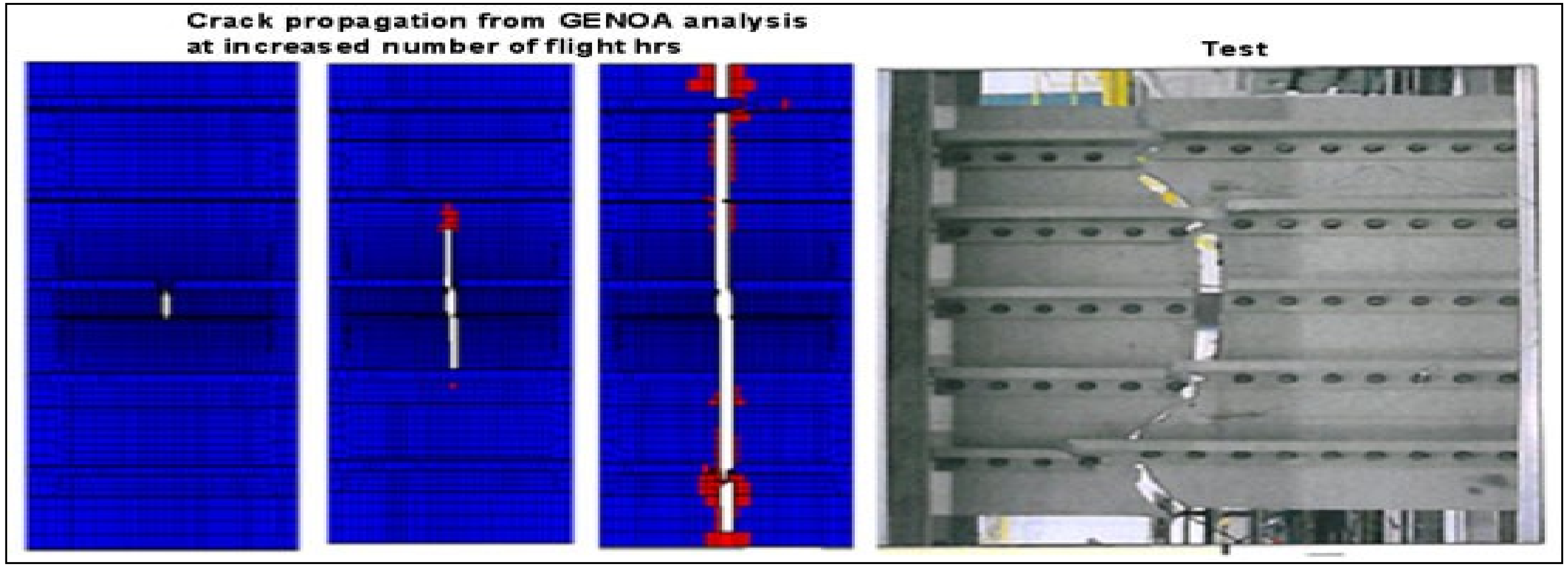
A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor
(AIRCRAFT APPLICATIONS)

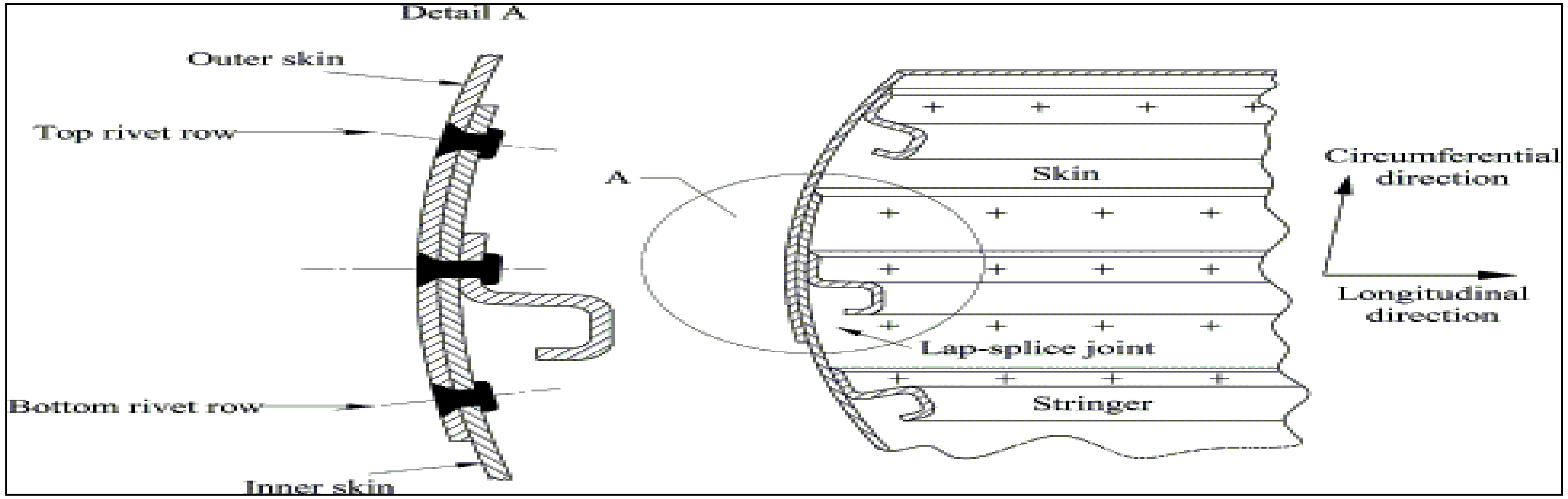




APPLICATIONS OF THE SENSOR TO AIRCRAFT WINGS:
Fatigue sensitive regions, locations under high loads, predetermined and formerly known-experienced spots on the structures and mechanical components such as Riveted, Bolted and Hole Type Connections etc..

A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor
(AIRCRAFT APPLICATIONS)





Fatigue sensitive regions, locations under high loads, predetermined and formerly known-experienced spots on the structures and mechanical components such as Riveted, Bolted and Hole Type Connections etc..

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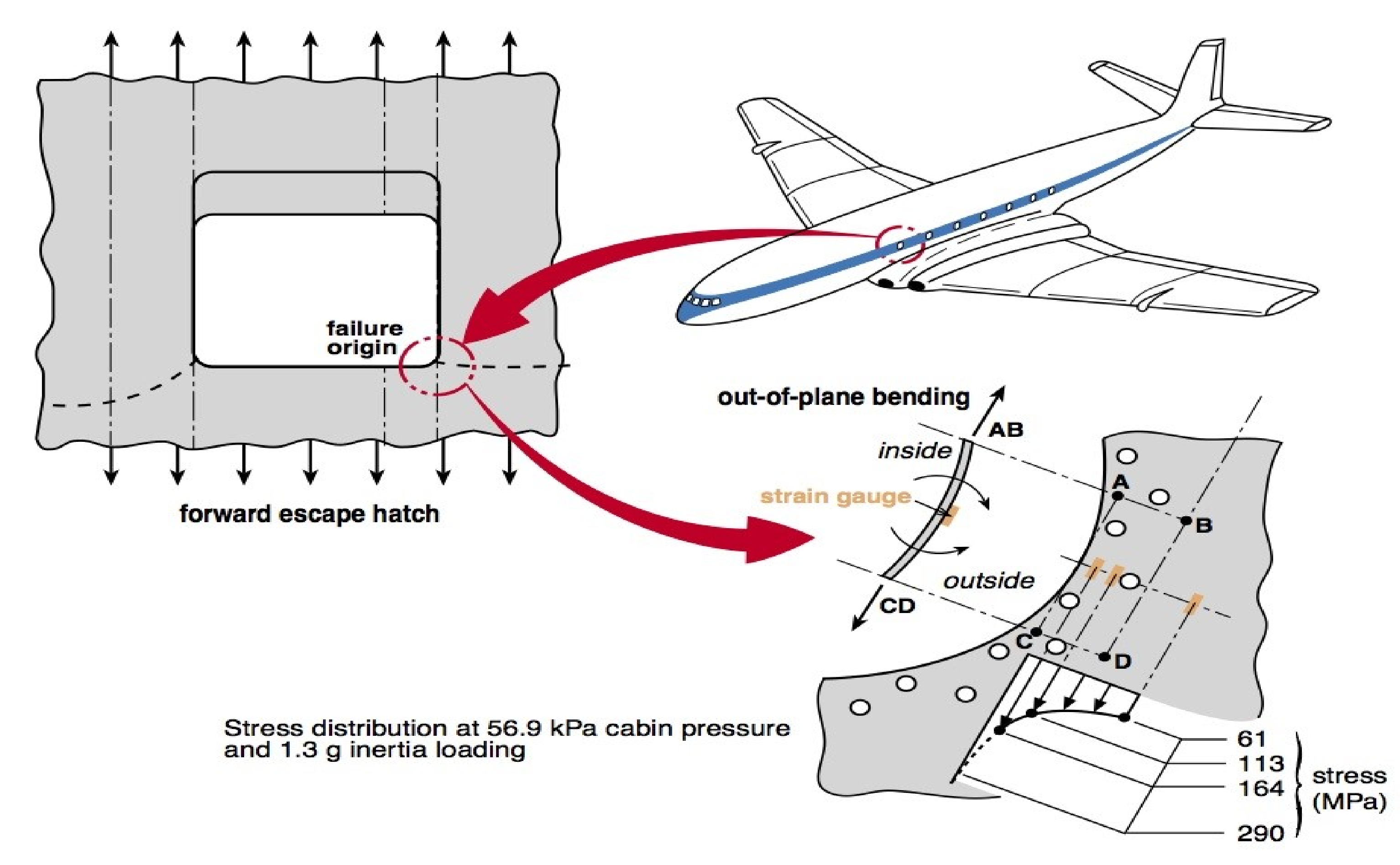
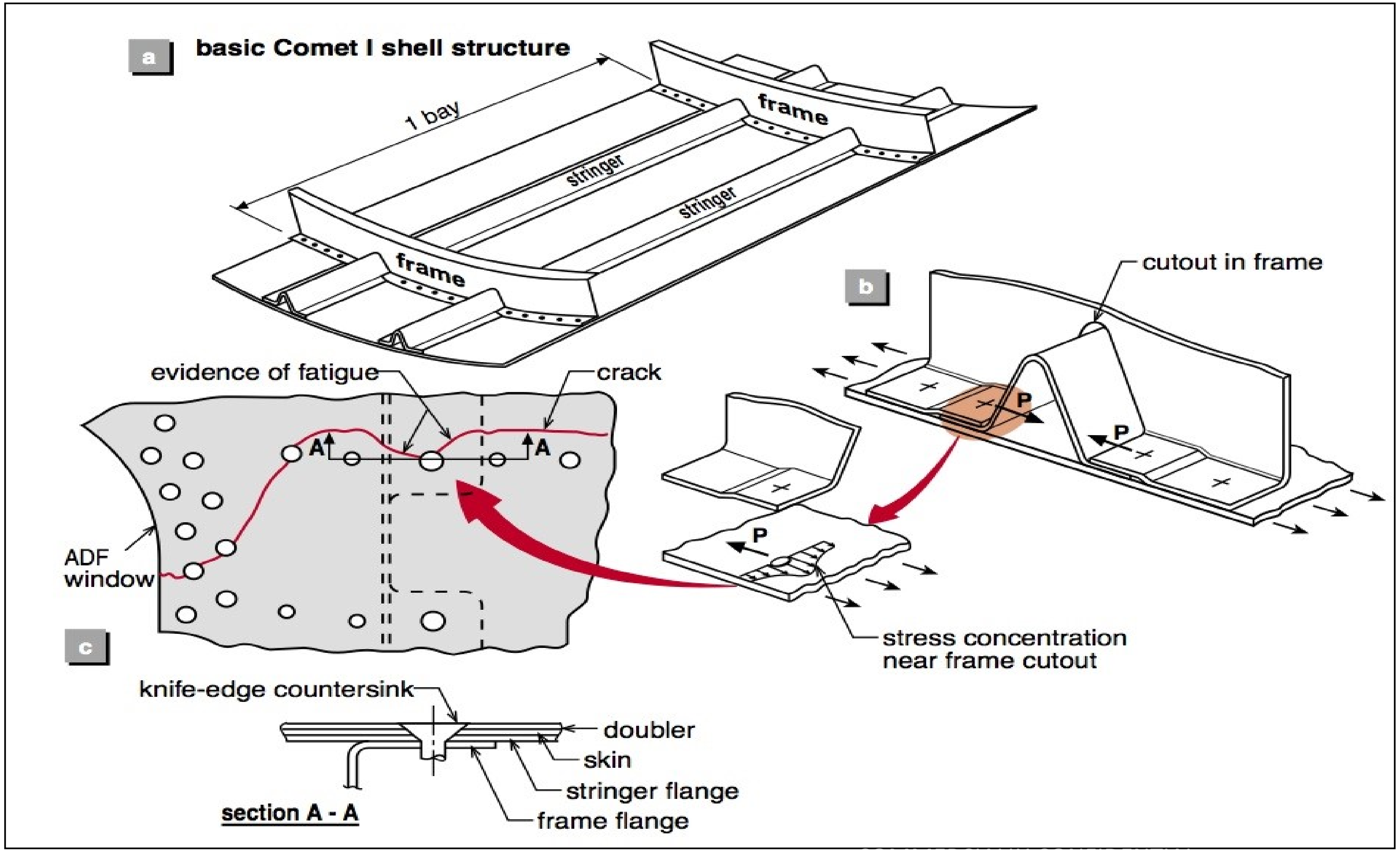
(AIRCRAFT APPLICATIONS)



Fatigue sensitive regions, locations under high loads, predetermined and formerly known-experienced spots on the structures and mechanical components such as Riveted, Bolted and Hole Type Connections etc..

A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor (AIRCRAFT APPLICATIONS)



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A Novel Wireless Enabled SHM-RFID-IoT Smart Fatigue Damage Sensor (AIRCRAFT APPLICATIONS)

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