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IN-DEUS

Integration of Non-Destructive Evaluation Based Ultrasonic Simulation

When Ageing Infrastructure Becomes an Issue

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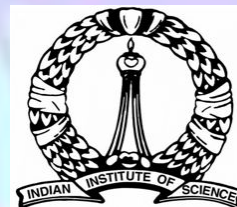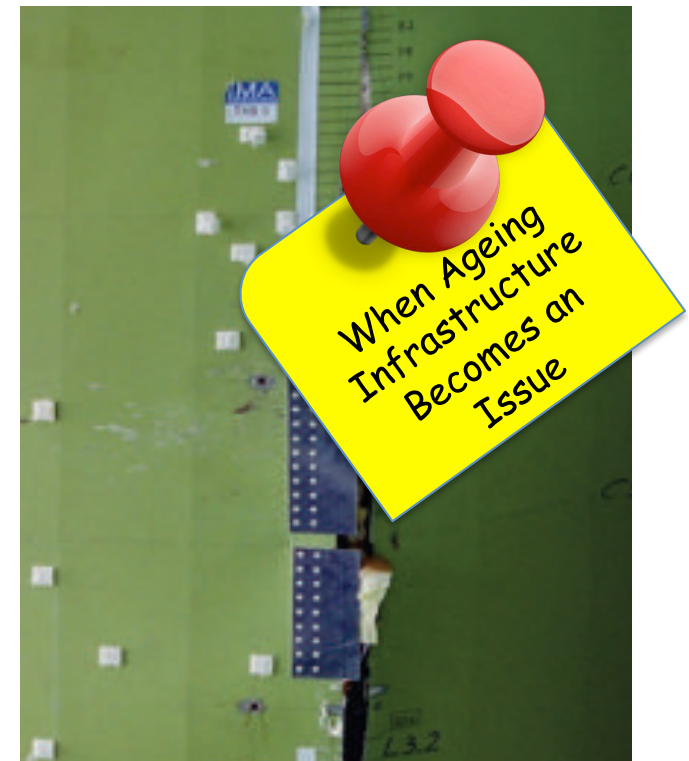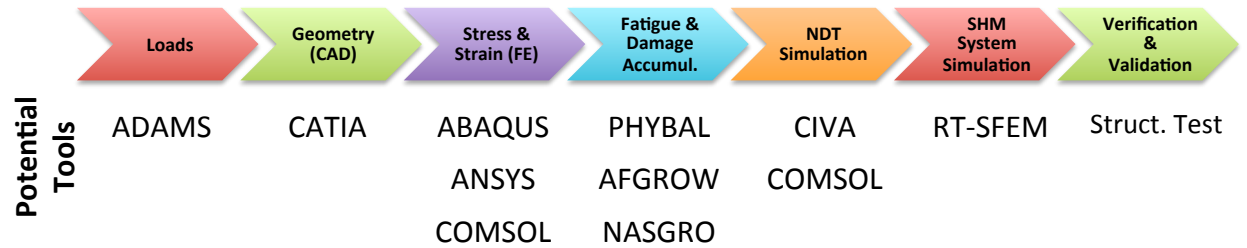Phone +91-8022932419

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Motivation

Many of the infrastructure assets today are ageing and require increased care through monitoring. Aeronautical structures are one of the most sophisticated in terms of design since they allow for damage to exist as long as this damage does not become critical. To avoid damage criticality loads monitoring, fatigue life evaluation and defined inspection are key elements of consideration. New coating and printing technologies in materials science, micro-electromechanical systems, enhanced computation power, lower sensing cost and much more has allowed Non-Destructive Evaluation (NDE) to become an integral part of structural components leading towards Structural Health Monitoring (SHM) systems, that will automate a structure's inspection process without compromising safety and reliability.

Objective

To establish a simulation platform for the design of optimized SHM-systems in terms of SHM verification and validation.

Potential Tools	Loads	Geometry (CAD)	Stress & Strain (FE)	Fatigue & Damage Accumul.	NDT Simulation	SHM System Simulation	Verification & Validation
	ADAMS	CATIA	ABAQUS	PHYBAL	CIVA	RT-SFEM	Struct. Test
			ANSYS	AFGROW	COMSOL		
			COMSOL	NASGRO			

We simulate stresses, strains, damage and even the monitoring systems for complex shaped and fatigue loaded structures

$$D = \sum_{n}^{i+1} \frac{1}{N_i}$$