## Abstract of Keynote Speech 6

# Predictive Maintenance by Crack Growth Analysis in Aircraft : From Off-line Inspection to On-line Prognosis

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**Abstract**

In the aircraft operation, great care should be taken to the maintenance of structurally significant parts, which undergo crack growth due to the fatigue loads, and may lead to the catastrophic failure if managed poorly. In order to tackle this issue, historically there have been three approaches to determine the time for replacement, which are the damage accumulation based on usage monitoring, damage tolerance based on repeated inspection, and the life prediction based on the real time condition monitoring. In the literature, the first two are often categorized as the Reliability Centered Maintenance (RCM), whereas the last is addressed in the Prognostics and Health Management (PHM). In this speech, their concepts and algorithms are briefly reviewed, followed by the comparative evaluation in terms of ease of implementation, complexity of the algorithm, and the risk management. Illustrative examples are also presented to aid the understanding of each approaches.