# Self-Dimensional Change Intelligence (SDI) Modeling for Aerospace Applications

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## Abstract

The meaning of title might be quite interesting as well as quit interesting to all after reading. The term SDI I coined first time and freshly which is I hypothesis to showcase you what are the possibilities in future aerospace domain and how it would be take place, what is the turning point where aerospace of earth seems to be like alien technologies (Assumption). Now what I intended with this communication I would like to understand with intriguing model.
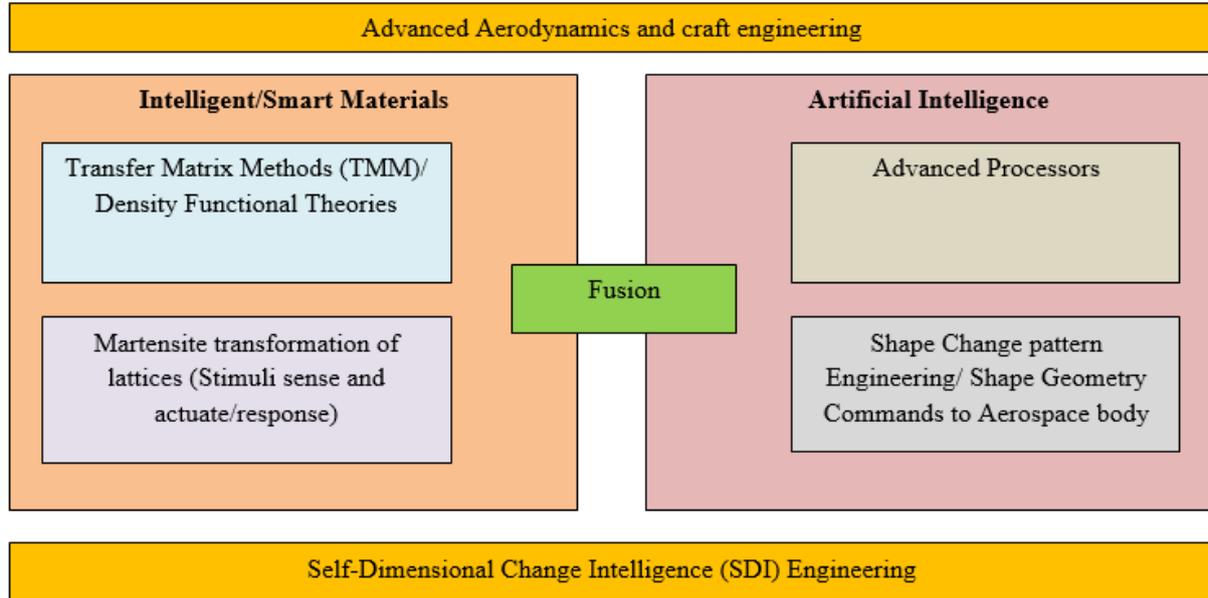


**Source:** Prof. (Dr.) Md. Sadique Shaikh

Before to explaining model further I would like to define terms SDI as "Self-Dimensional Change Intelligence (SDI) is hybrid engineering of smart materials with additional Artificial Intelligence control to change geometrical dimensions/coordinates of aerospace craft". Whereas Smart Material can be defined as "the range and verity of materials which sense physical/space/environmental stimuli itself and after sensation actuate themselves according to geometry controlled by AI, example conductive polymers, Shape Memory Alloy (SMA).

In above model I showed how this happen would be possible in near future with dividing model into two segments as Intelligent/Smart Materials and Artificial Intelligence with two parallel design lines Advanced Aerodynamics and craft engineering and Self-Dimensional Change Intelligence (SDI) Engineering. These two technologies need to cascade using these two design lines. The first segment based on genuine engineering of material science like Shape Memory Alloy (SMA), Photonic Crystals based materials, transitional semiconductors mix materials, conductive polymers coated materials etc. these materials not only sense and actuate but also has self-replication, self-healing mechanism engineer in them. This segment hence further distributed as Transfer Matrix Methods (TMM)/ Density Functional Theories and Martensite transformation of lattices (Stimuli sense and actuate/response) where materials growth according to nature means whether its photonics based, or electronics based. To regularize, process, monitoring and triggering SDI second segment would be supportive named Artificial Intelligence which stabilize, channelize and precision control of stimuli on which materials sensation and actuation depend and how Mach they need to transform from one to another form using SDI. This unit further has two important parts as Advanced Processor for SDI pattern generation, command, process and control with time and condition management and second Shape Change pattern Engineering/ Shape Geometry Commands to Aerospace body to generate and available SDI dimensional data to Advanced Processor for execution for example for high speed disc type aerospace craft which spinning has high velocity as compare to traditional line flying, for SDI Curvilinear or Cartesian or Cylindrical coordinates which fit best also take such decision and available to Processor.

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