

## Safety and Mission Assurance for Spaceship Earth

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We feel safe taking plane trips because we know that airplanes are designed and maintained to ensure maximum safety (less than one in 9.2 million flights has a fatal accident).

In fact most of us wouldn't buy a plane ticket if we thought that there was even a one in a hundred chance of crashing.

Nevertheless right now we are flying with all our families and friends through space on planet Earth, and scientists agree that our planet's life support systems are progressively failing.

If we continue with business as usual, in all likelihood a combination of increasing resource shortages and failing ecosystems will cause the global economy to collapse by mid-century.

If one plane develops serious problems, we can take another flight. But if the major biophysical systems that support life on our planet fail, we are in trouble. We are all traveling on Spaceship Earth; there is no backup planet and we can't get off.

If our children are to have lives worth living, we need to apply the methods and standards used in the aerospace industry to the problem of preserving a safe environment and ensuring a safe future.

When designing or modifying an airplane or space vehicle, aerospace engineers begin by establishing the critical parameters for its safe operation – the "Safety Case". The Safety Case determines the design requirements. "Mission Assurance" methodologies are then used to build, operate and maintain the vehicle to standards that ensure that essential human and mechanical systems always function within wide safety margins.



*Sophisticated methods are used to ensure that air and space vehicles are designed and operated for maximum safety.*

*Shouldn't we be using similar methods to ensure a safe future for our children?*



We should take a similar approach to designing a safe future for humanity. We need to start by establishing the critical biophysical and social parameters of a sustainable global system; then use this Safety Case to determine its design requirements; and then use Mission Assurance methods to ensure that the new designs are implemented and maintained.

This approach is proactive rather than reactive. It recognizes that current methods and structures are failing to solve 'wicked' environmental and social problems. It starts by examining what is necessary rather than what is presently possible. It accepts that the application of whole-systems design, development, operation and sustainment is a proven way to create viable solutions in safety and mission critical environments.

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