

Enabling Planetary Defense: Science, Law, Ethics

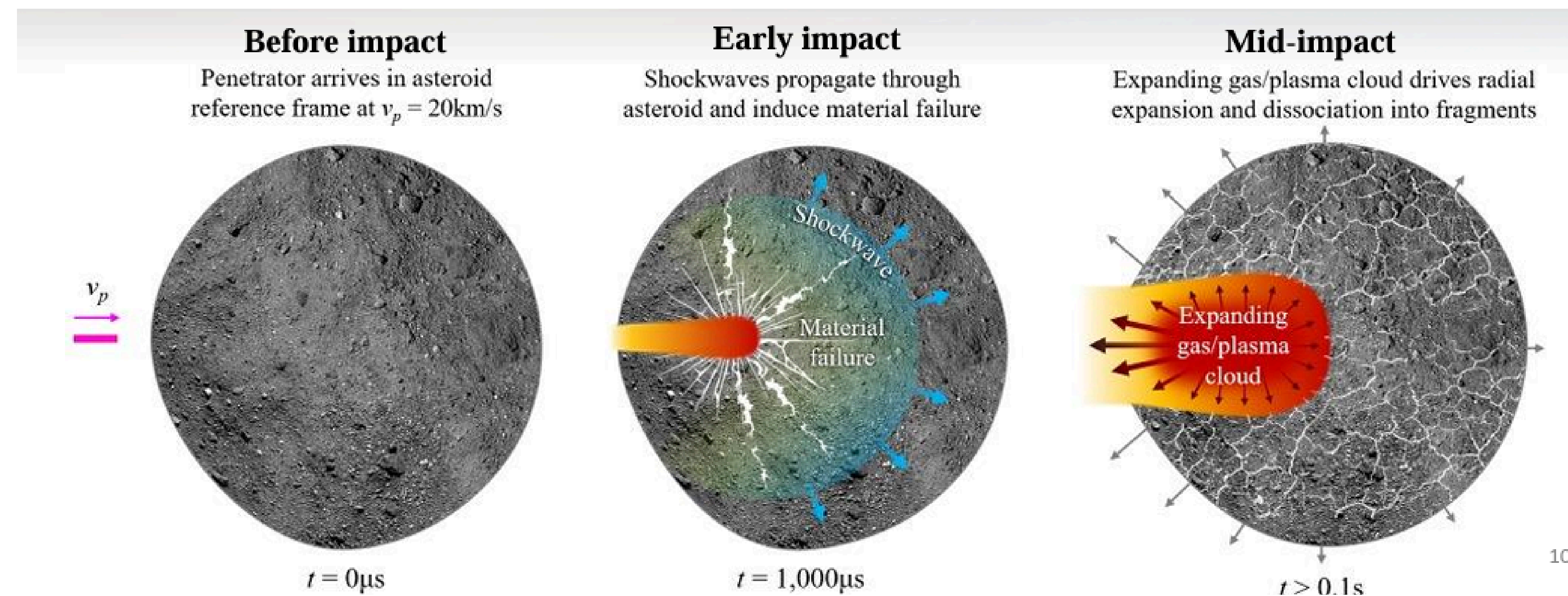
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Technical

There are many theoretical methods of planetary defense, but as the Near Earth Object (NEO) gets larger and more imminent, the options diminish rapidly, realistically leaving two options: hypervelocity with passive or HE penetrators and passive with nuclear explosive device (NED) penetrators. The two are synergistic leaving large flexibility as the same basic "single launcher solution" can be used in either mode depending on the threat. This allows rapid development to an operational state. In the short time scale terminal mode the atmosphere acts as a "beam dump" to dissipate the fragment cloud energy in decorrelated shock waves.



Legal

As for the legal aspects of planetary defense there are two main issues, the dual use nature of NEDs and liability implications of an unsuccessful planetary defense attempt.

Both of these open legal questions can be solved by applying the principles of transboundary harm working in conjunction with preexisting treaty obligations.

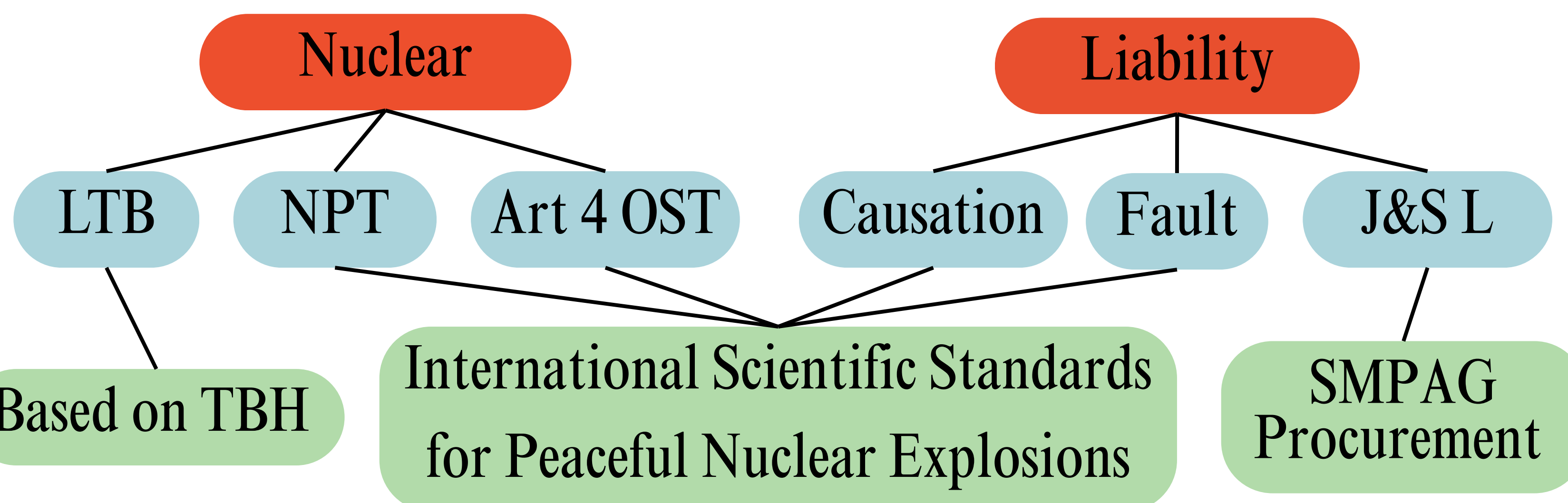
Specifically, the obligation to use international standards for potentially harmful activities can help allay dual-use concerns and inform fault, but these standards are currently non-existent, but the SMPAG would be a great place to create and articulate these international standards

Recommendations

- The preservation of all human life, without discrimination, should be the ultimate priority for planetary defense
- Wherever possible and not in conflict with the above priority, risk of harm to other bioforms should be mitigated as far as possible
- Approved planetary defense technologies should demonstrate efficacy and be validated through simulations and live demonstrations, as appropriate
- Planetary defense systems should be subject to international standards to minimise the risk of unauthorized use in terrestrial conflict, where relevant
- Dual use technologies should be subject to both civilian and military oversight to ensure transparency and to protect the public interest
- Space law should be informed by international law principles, such as transboundary harm and cooperation especially when it comes to defining fault and causation in regards to liability
- Planetary defense groups should include representation from many countries to ensure international perspectives are considered, including from non-Launch states
- In the event of a predicted impact with Earth, the regions most directly affected should have a right to request and receive support to avoid or mitigate the effects of the impact

Ethical

Ethically speaking there are two ways to approach planetary defense, a proactive approach and reactive approach. A proactive approach would be to eliminate all potential threats whereas a reactive approach is only acting once a threat has been confirmed as imminent. The balance of interest here is the economic and heritage implications of proactive intervention, regional interest vs. global responsibilities, and how to prioritize targets. Regardless of the approach multilateral action through international processes upholds fundamental tenets of cooperation and ensure inclusion of a variety of perspectives throughout the globe.



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