

Figure 1: Laser Debris Removal

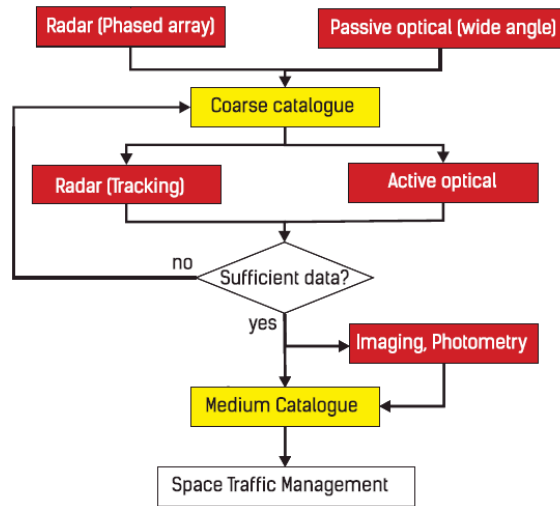


Figure 2: The role of active-optical monitoring in LDR strategy



Figure 3: Debris tracking mock-up from CLEANSPACE Demo-Day

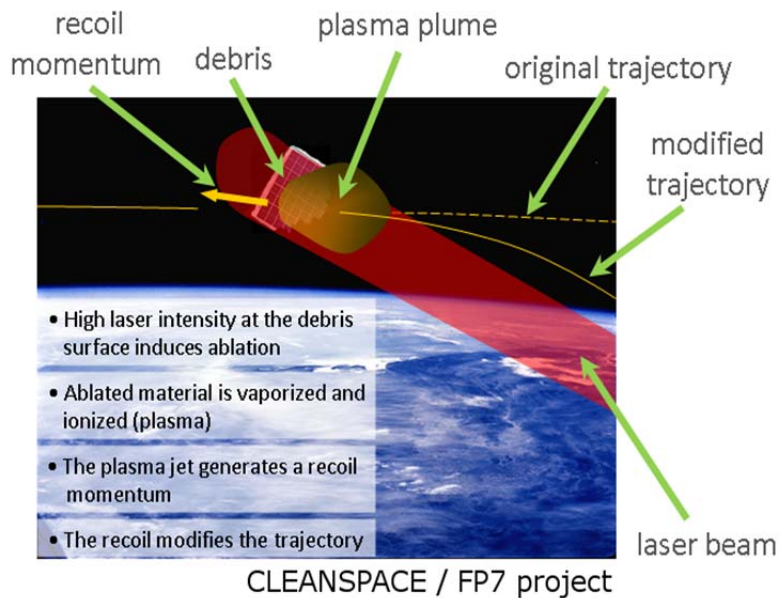


Figure 4: Laser-induced ablation of material causes a recoil momentum

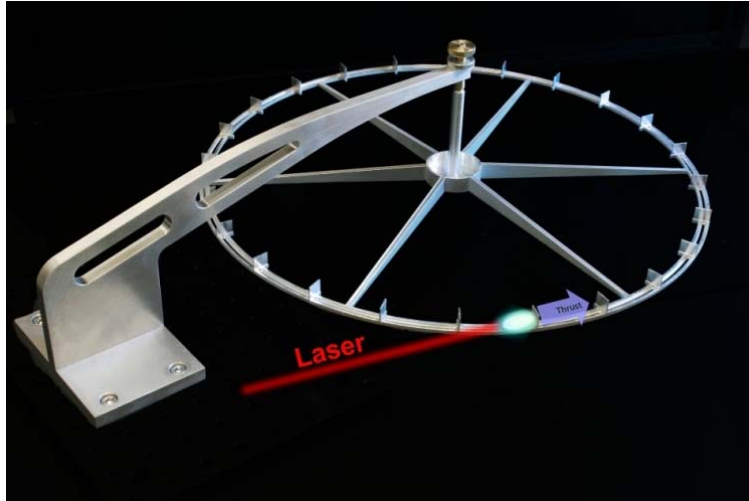


Figure 5: A “laser wheel” driven by laser ablative thrust demonstrates the process of laser ablation propulsion

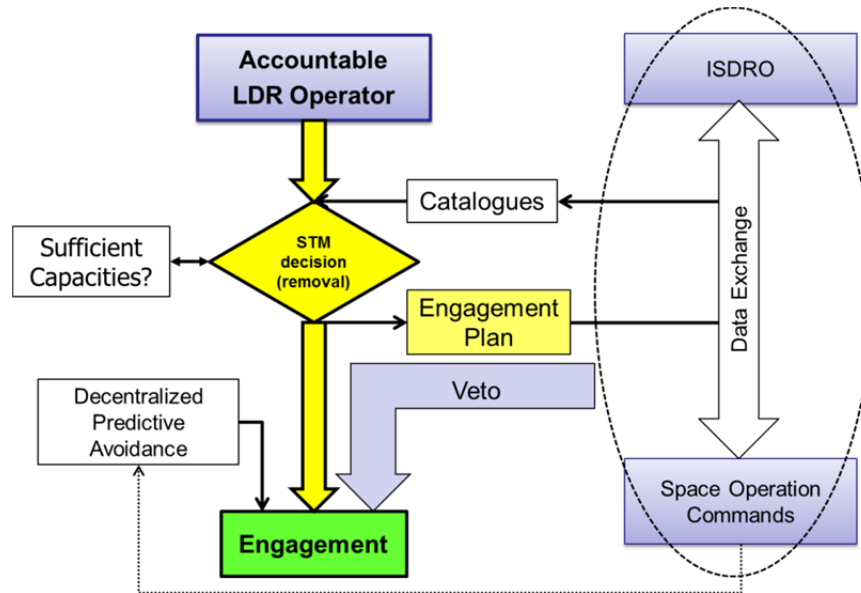


Figure 6: ISDRO concept

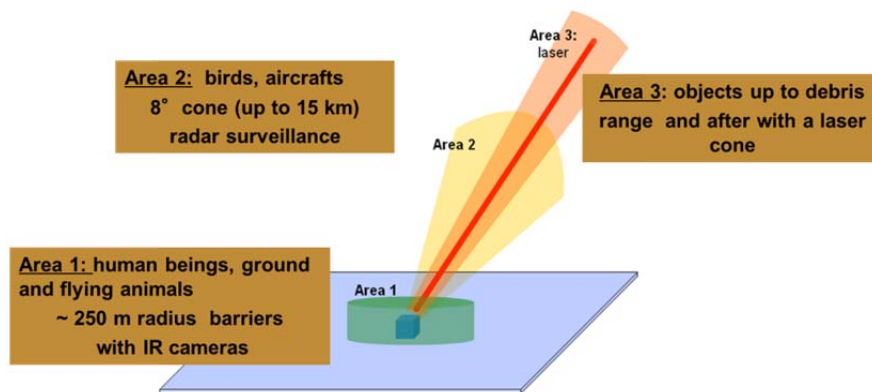


Figure 7: Laser safety areas to protect

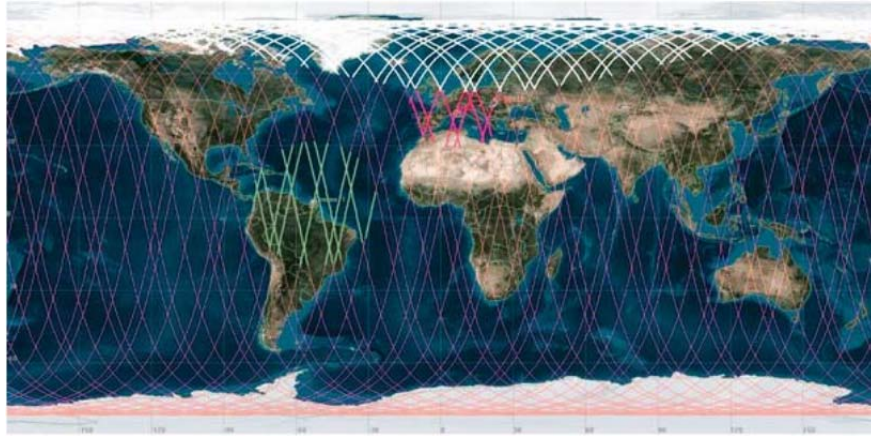


Figure 8: Access to objects on sun-synchronous orbits from Kourou (green), Grasse (pink), Kiruna (white)

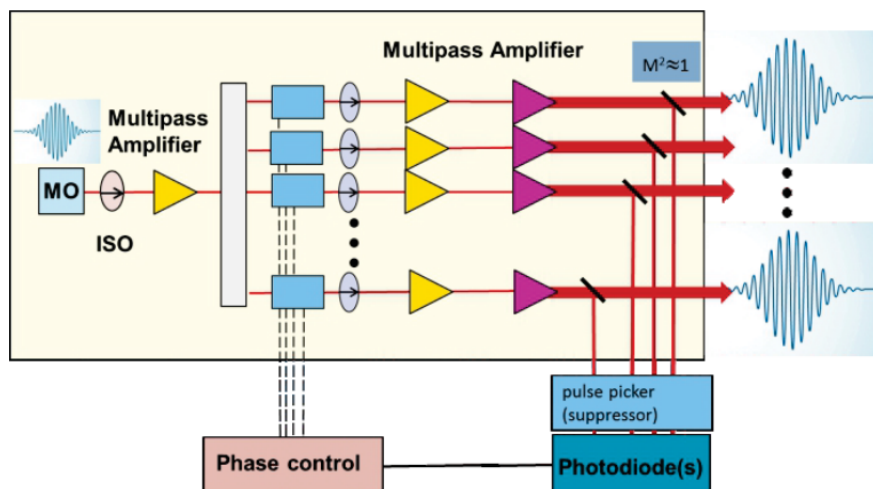


Figure 9: Suggested active beam control setup for coherent beam combining

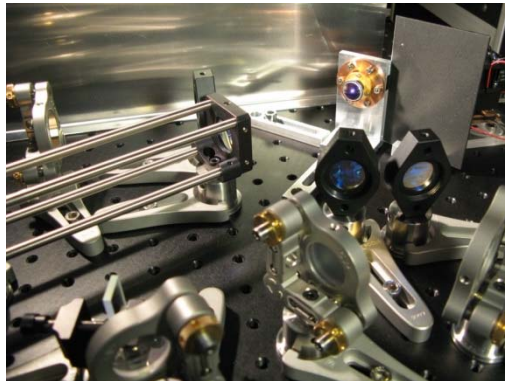


Figure 10: A demonstration setup based on thin-disk laser technology

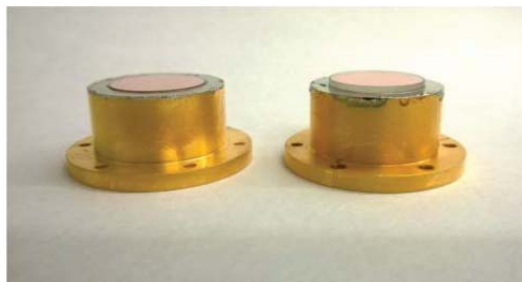


Figure 11: "Thin" and "thick" disk for high energy

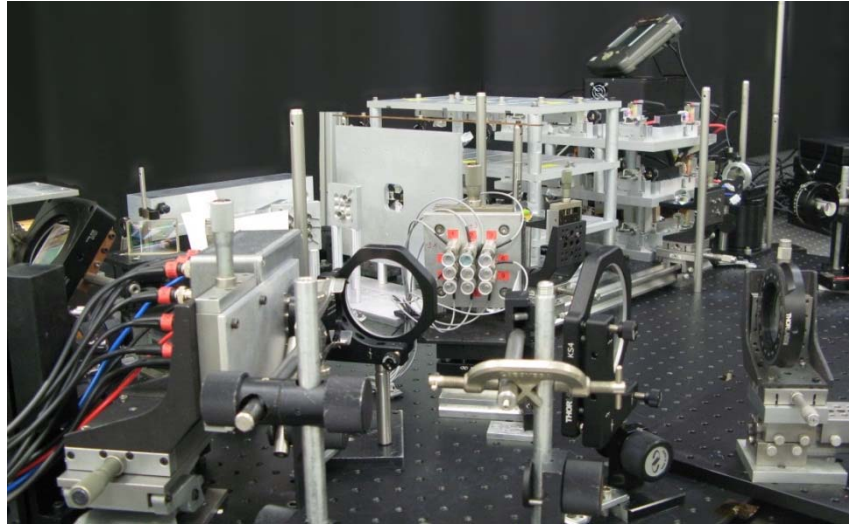
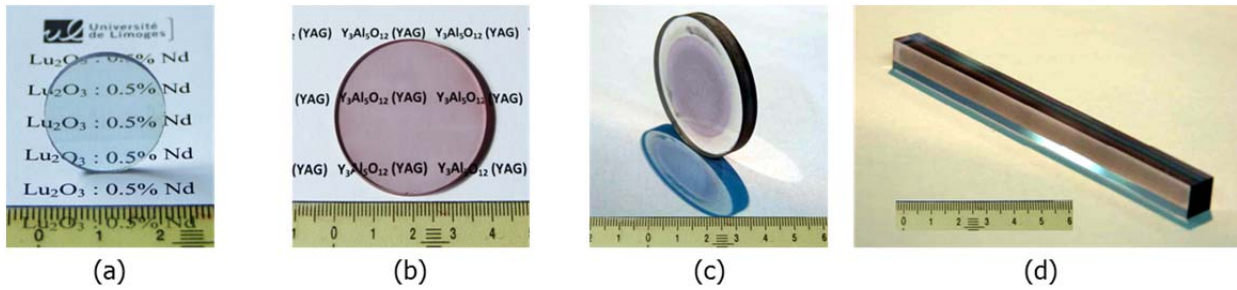


Figure 12: A demonstration setup based on active coherent coupling of nine pulsed laser beams presented during Demonstration Day



(a) (b) (c) (d)

Figure 13 : Ceramics in the form of Nd:Lu₂O₃ disc (a), Nd:YAG disc (b), Nd:YAG disc with YAG cladding (c), Nd:YAG slab (d).

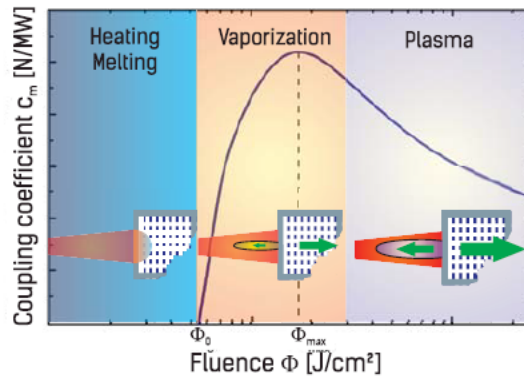


Figure 14: Regimes of laser- matter interaction: Generation of plume and momentum.

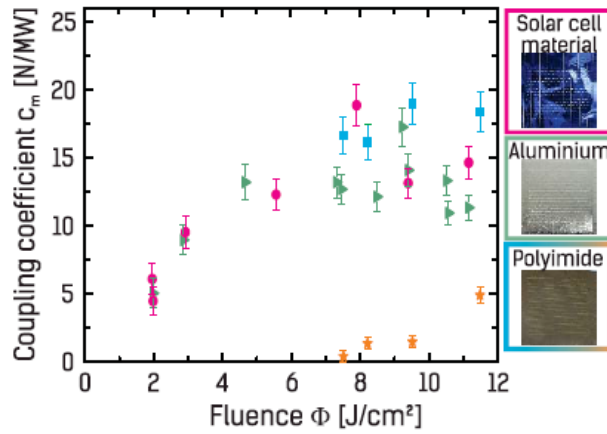


Figure 15: Experimental data on momentum coupling for space debris relevant materials.

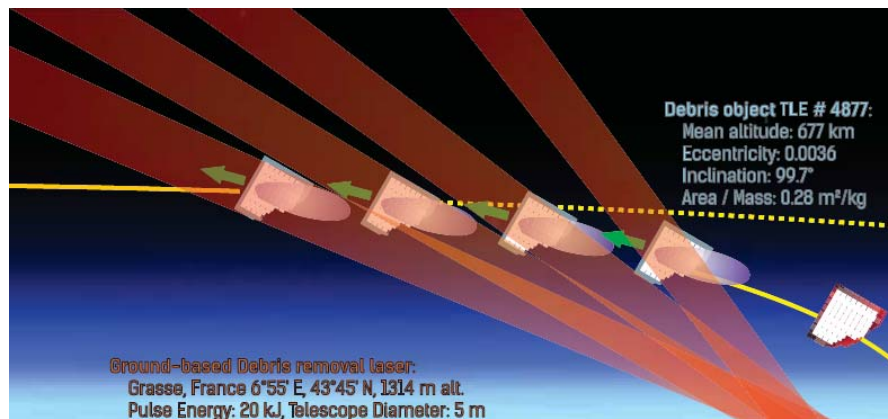


Figure 16: Debris deorbiting by pulsed laser illumination within one pass.

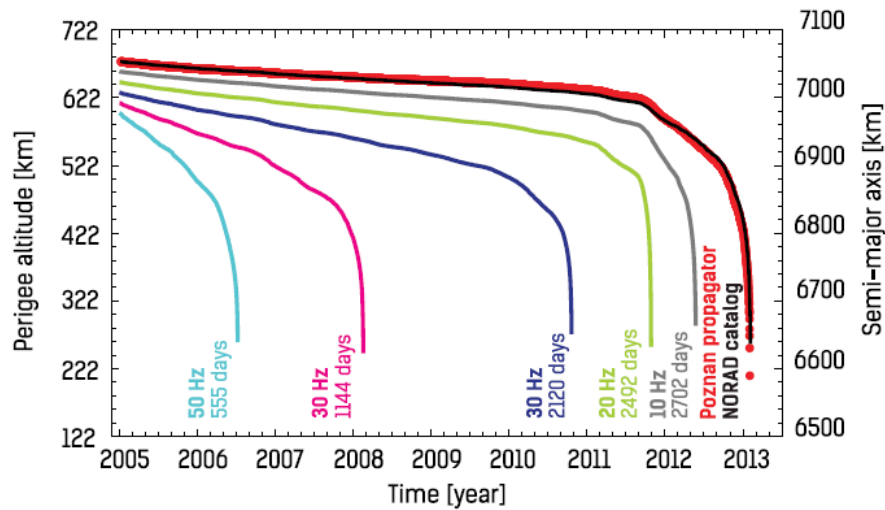


Figure 17: Simulated altitude change and remaining lifetimes for debris object TLE # 4877 after illumination in one pass mode for various repetition rates.