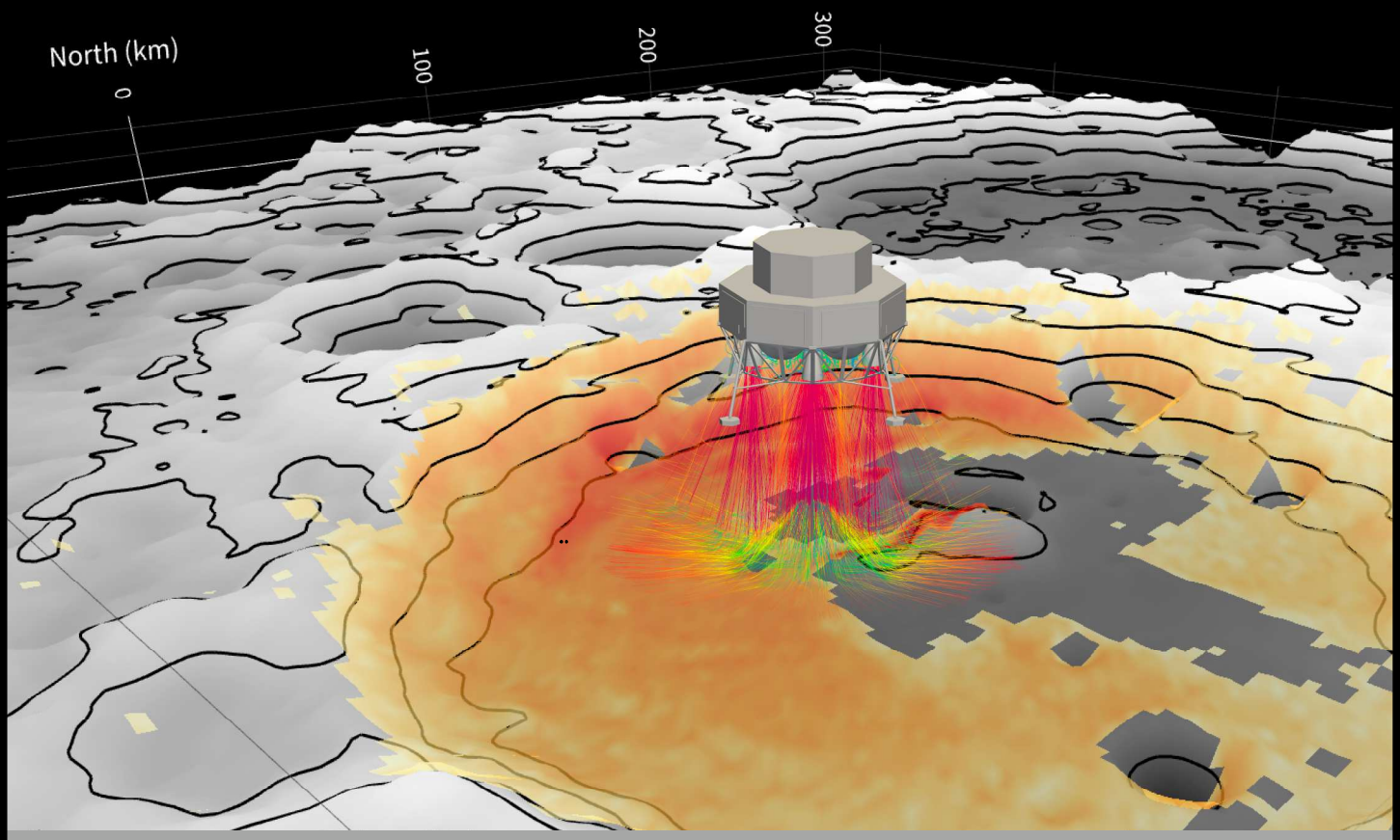
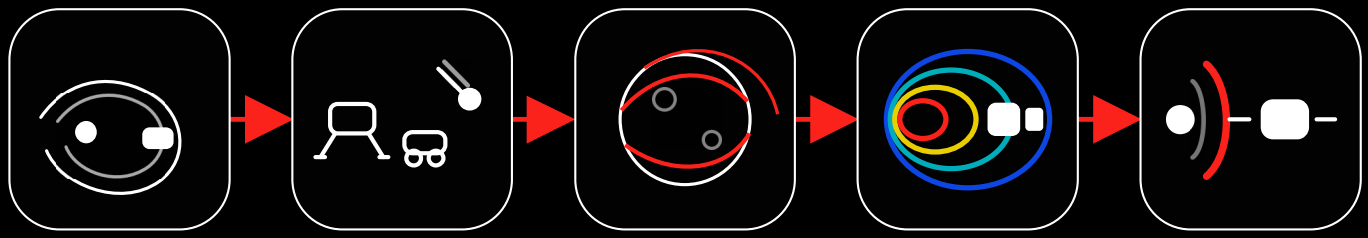
MOONSAFE



Design SAFE lunar **infrastructure**

CIM LAB BY CIM-MES

How MoonSAFE will work
(under development)



SCENARIO

Terrain, infrastructure and operations

SOURCES

Landers, rovers and meteorite impacts

TRANSPORT

From local to orbital scales

RISK

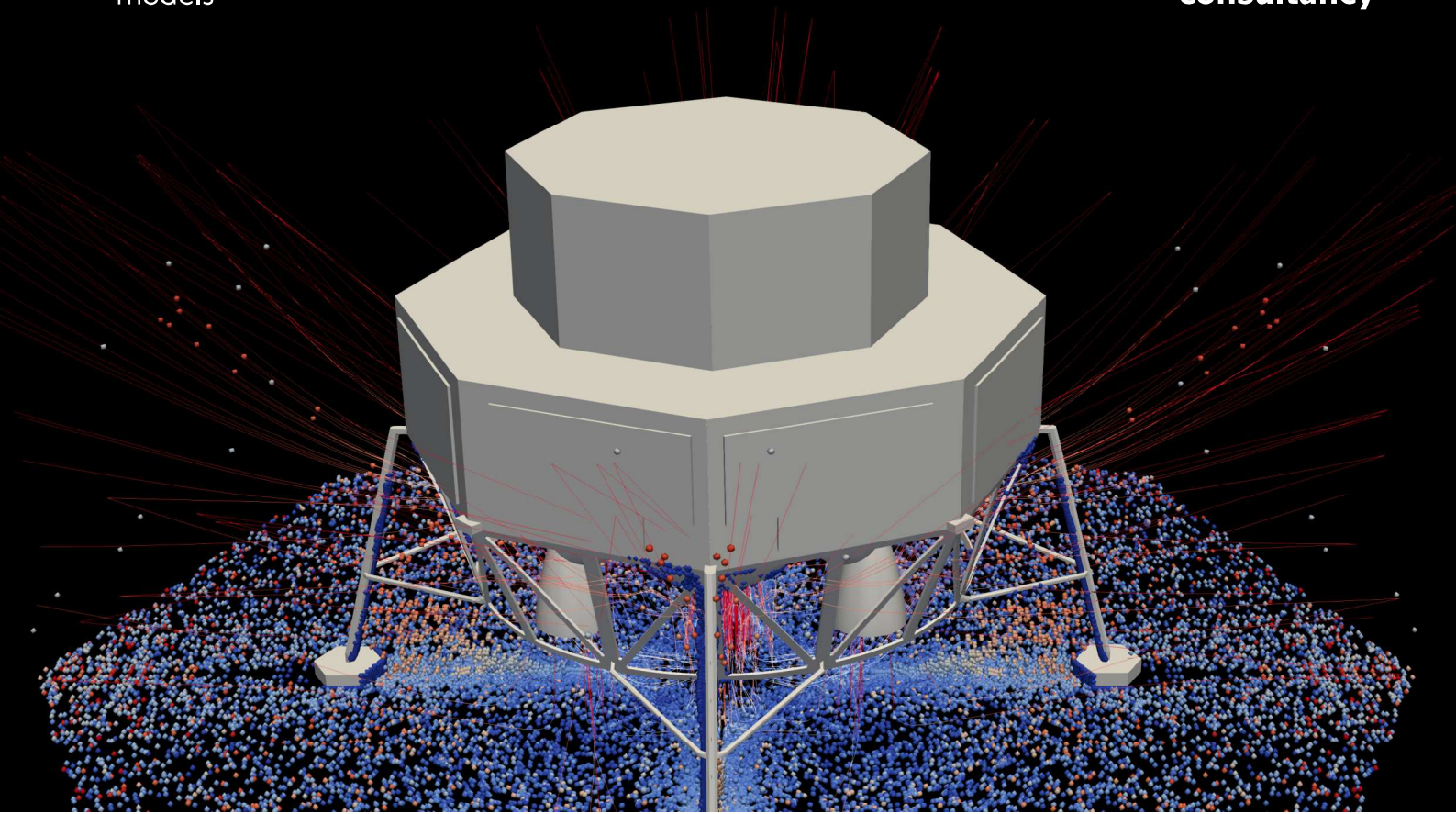
Contamination impacts and degradation

OPTIMISE

Layout, shielding and operations optimization

Make informed decisions supported by physics-based modelling

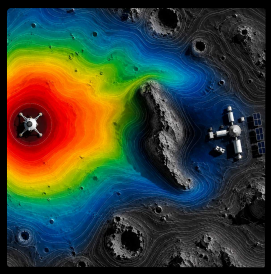
- **Validated** deposition and resuspension models
- **MoonDUST**-based PSI particle source data
- **Monte Carlo** particle transport simulations
- **Terrain-aware** long-range particle transport
- Stand alone **software** or combined with **consultancy**



Mitigate dust risks during design

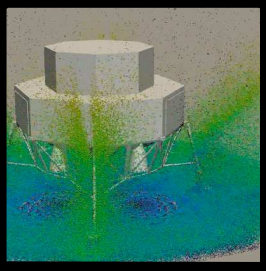
1. Choose the optimal infrastructure layout

Predict particulate contamination for different infrastructure layouts and operational scenarios, including landings and rover activity. MoonSAFE will simulate particle generation and transport over complex lunar terrain to identify safer locations for critical assets and compare alternative designs.



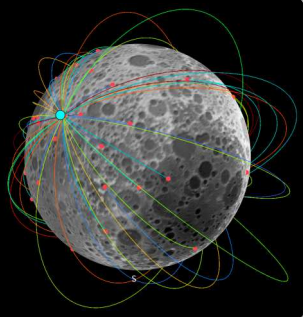
2. Assess impact of nearby landings

Simulate plume–surface interaction and regolith ejection generated by nearby landings. MoonSAFE will predict particle trajectories, velocities and size distributions to determine which infrastructure is exposed, quantify the expected contamination and impact risk, and support safer infrastructure placement.



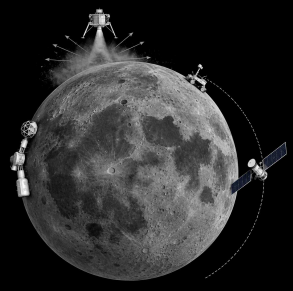
3. Mitigate meteorite-induced secondary ejecta

Assess secondary ejecta from meteorite impacts across the entire lunar surface. MoonSAFE will predict long-range particle transport to determine where the ejecta will travel, which infrastructure may be exposed and where to locate critical assets to minimize the associated risks.



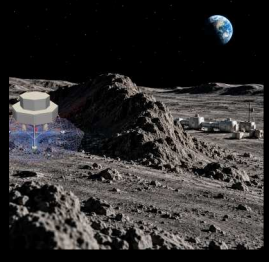
4. Assess orbital risks from lunar ejecta

Assess how lander operations and meteorite impacts can affect lunar orbit. MoonSAFE will predict the transport of ejected particles from the lunar surface towards orbit to identify orbital regions and spacecraft potentially exposed to dust and high-velocity ejecta.



5. Choose optimial mitigation strategies

Evaluate alternative locations, barriers, shielding and operational scenarios using a common simulation environment. MoonSAFE will allow different mitigation concepts to be compared quantitatively, helping engineers reduce dust-related risks and select effective mitigation strategies.



CIM LAB BY CIM-MES

Who we are?

CIM-lab, a division of CIM-mes, develops innovative modelling techniques for space applications. In cooperation with ESA, we have created several software tools — **DUSTFLOW, MoonDUST**, and **TEDMAP 3D** — supporting contamination and thermal analyses in space projects.
Currently, we are developing **MoonSAFE**, to support the design lunar infrastructure by reducing lunar dust-related risks.

How we work?

1. Free consultancy session
2. Offer, schedule and scope
3. Execution and intermediate checks
4. Joint optimisation and revisions
5. Report, documentation and follow up

CIM-mes provides valuable support and the necessary calculations in a very short time, which repeatedly accelerates our work and design decisions. We value working with them – it is substantive, fast and predictable at every stage.

Filip Ljubas
Lead Engineer in **Kelvion**

Among the others, we were trusted by

ThalesAlenia Space — a Thales / Leonardo company · esa · AVIO · BLUE ORIGIN

Ready for the next step? Contact us, and we will help define the scope of work and align with your project requirements.

CIM LAB BY CIM-MES

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You whish to discuss your project?

Schedule a free technical consultation with our engineer.

Scan the QR code to book a slot.