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The Future of CLPS:
Lessons Learned from the Implementation of VIPER

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EXIT
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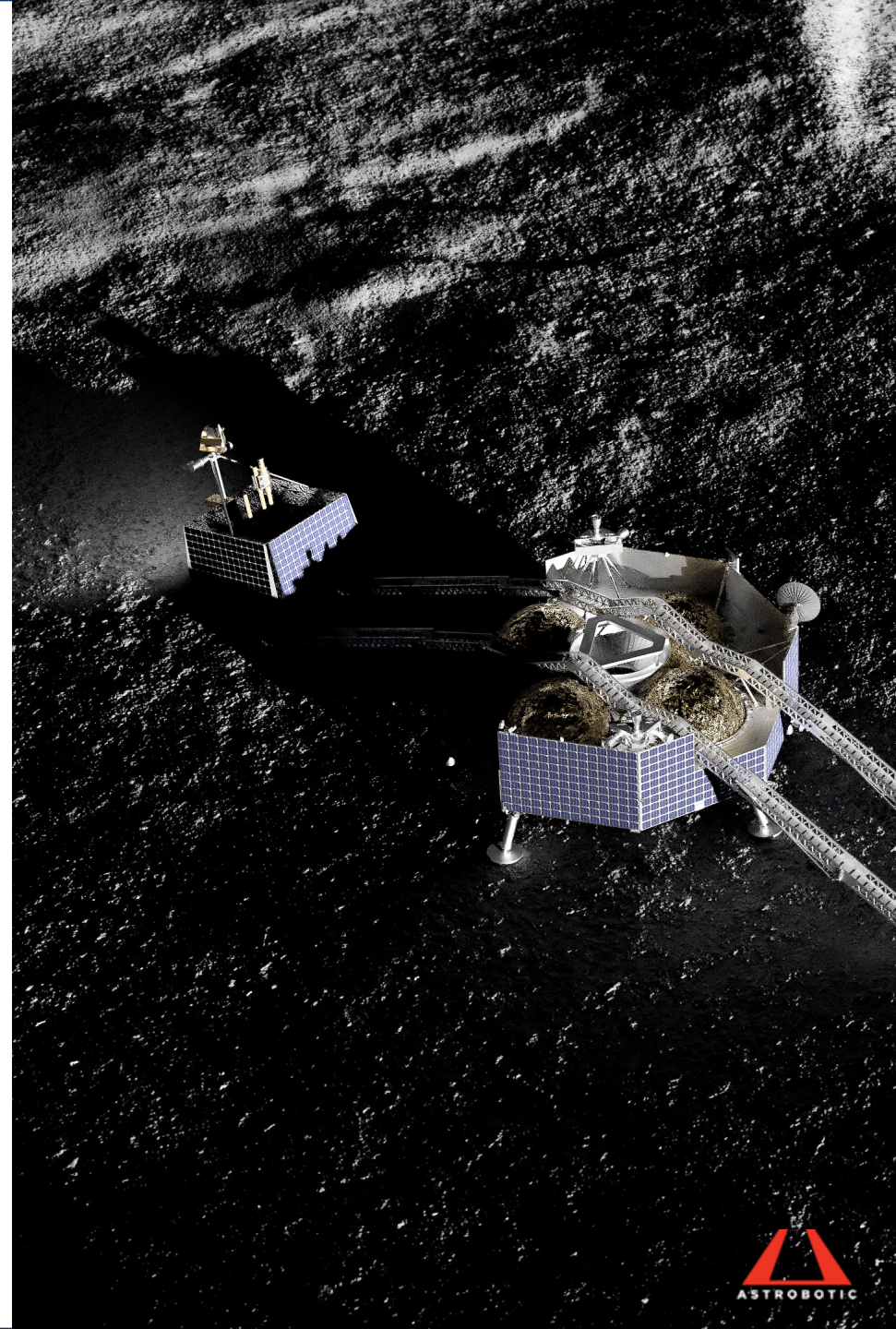
BENEFIT OF CLPS COMPETITION

CLPS model maximizes value through standardized competition.

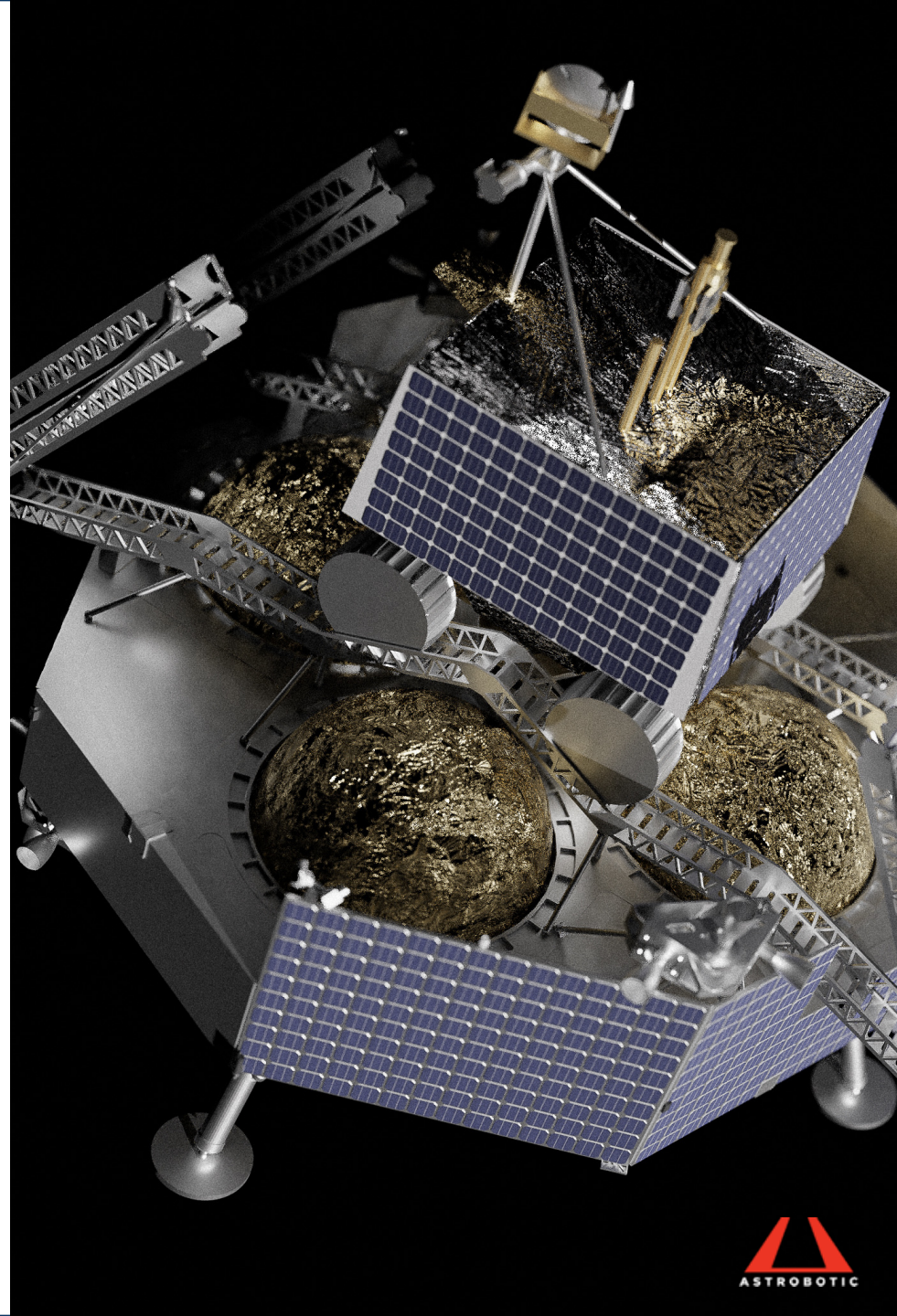
- Most procurement models put burden on PIs to “level set” the spacecraft service field.
- For instance, PIs are the arbiters of lander or rover capability and program.
- PIs can judge science capability but may not be best positioned to evaluate price and program.



PREFERRED MODEL

CLPS model is not limited to landers, and vertically integrating the delivery model could offer significant value.

- Natural progression to tried methods like commercial crew and cargo.
- Astrobotic for instance, offers the Griffin lander and Polaris rover, which can work in concert.
- Use of a full complement is likely a much cheaper approach for most missions.
- Requirements can be streamlined, and the mission can be thought of holistically.
- Performance could also be maximized for missions because it unleashes companies to build solutions rather than pieces.



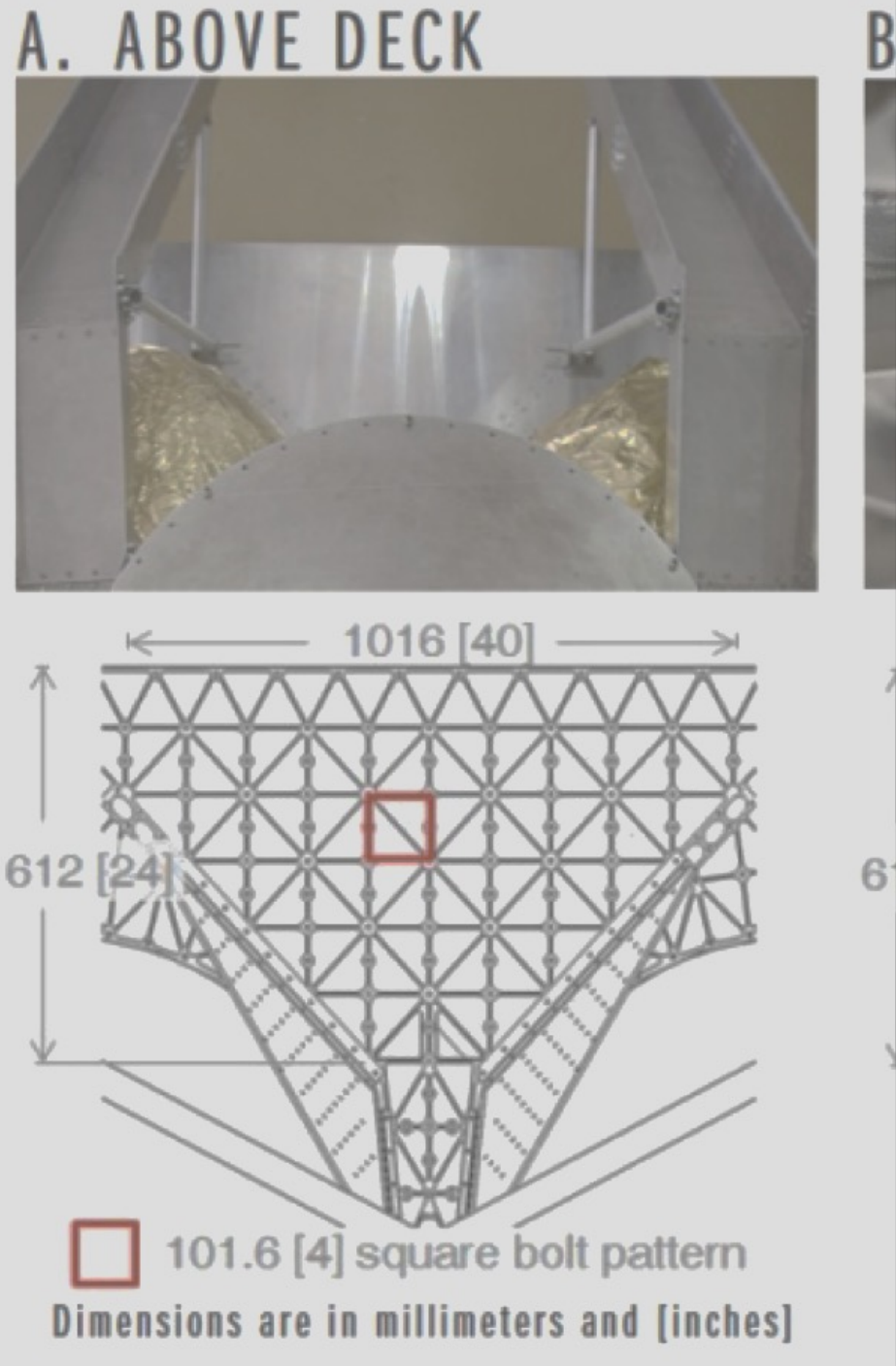
LESSONS LEARNED

The CLPS model works best when a catalogue of vehicles is established.

- Griffin User's Guide was available in 2014.
- User guides and catalogue info should be widely available to the science community.
- Standard interfaces should be established in the science competition much like PRISM.
- Non-recurring engineering (NRE) can be difficult for CLPS competitions.

Studies are helpful.

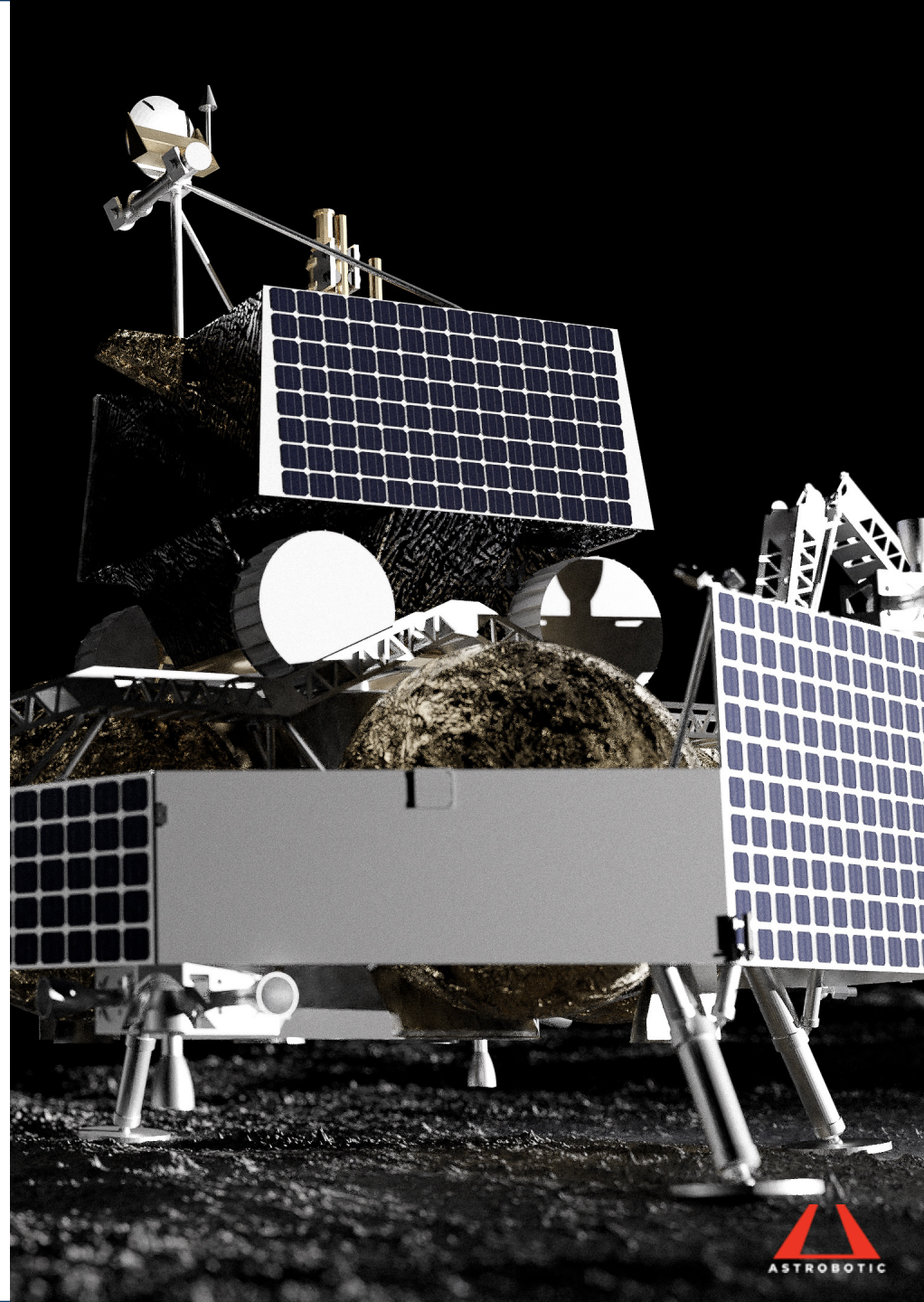
- Funded studies can help with NRE.
- TO3 study was done before VIPER.



LESSONS LEARNED

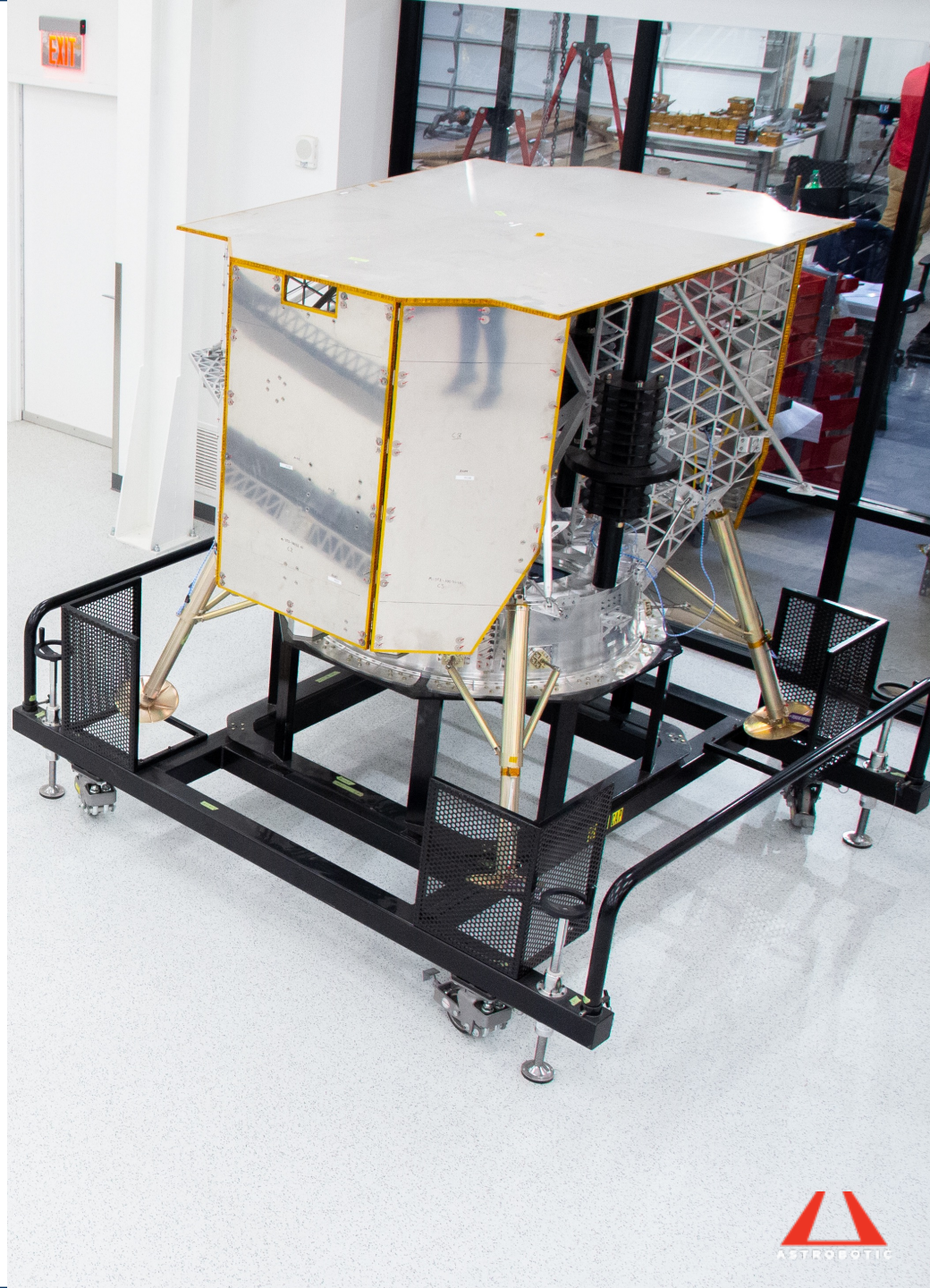
Commercial cases should be considered.

- Part of what makes CLPS work is that outside sales can be made in addition to NASA payloads.
- The CLPS office serves as a helpful mediator when it comes to scope creep.
- Science missions frequently go to one-off destinations.
  - It can be challenging to find customers.
  - It can be challenging to maintain mass, volume, power, comm, etc. allotments for commercial payloads because science payloads takes priority.
  - That said, it still could be far cheaper to use the CLPS model if an end-to-end service is used to reap greater value overall.



RECOMMENDATIONS

- Use the CLPS office or at least its model and use end-to-end vertically integrated commercial services.
- Fund studies when NRE is anticipated.
- Compete science missions to a pool of vendors that can provide end-to-end solutions, rather than leave it up to PIs.
- Craft science competitions with product lines in mind, with known interfaces, and even repeatability considered (e.g., PRISM).



Thank You