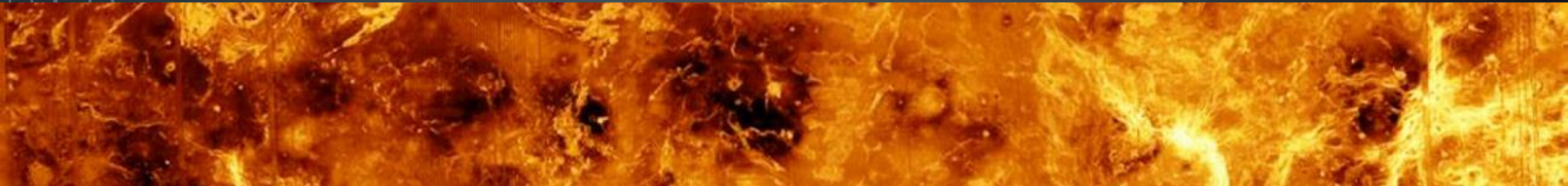




VENUS SURFACE MISSIONS

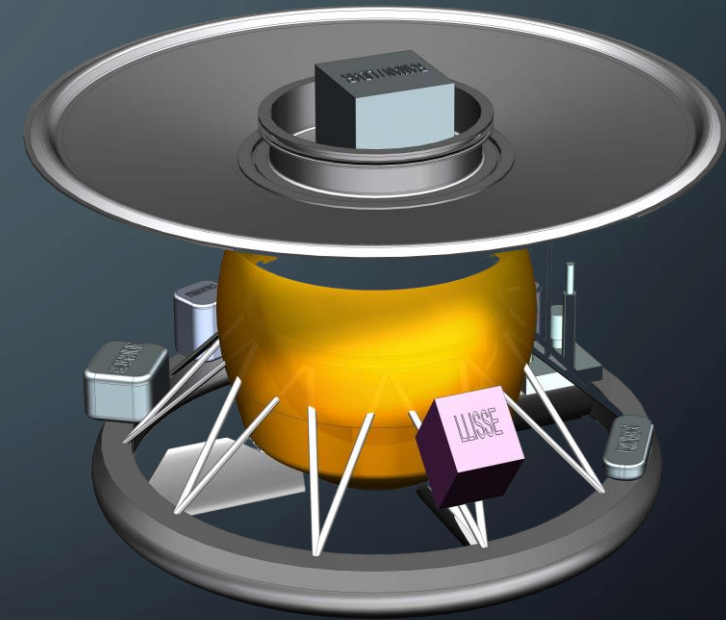
– CAPABILITIES AND POTENTIAL SCIENCE IMPACTS



VENUS SURFACE – SOME CURRENT RELATED ACTIVITIES

*One may be surprised by the amount of activity around
Venus surface exploration / science*

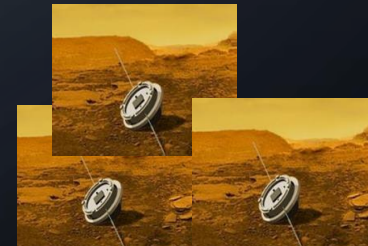
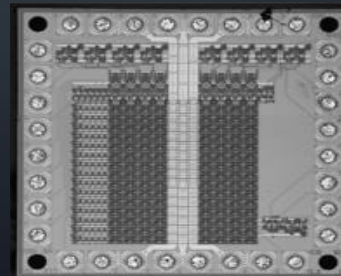
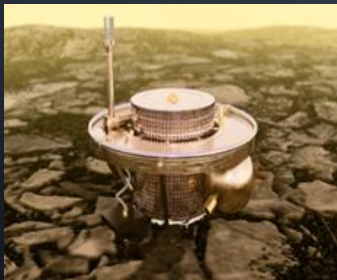
- Studies
 - Near and long term
 - Small and Large mission concepts
- Laboratory Experiments / Facilities
- Technology development
- Lander System development



Venera-D Lander Concept

KEY CAPABILITIES FOR NEW SCIENCE

- A NASA study recently explored Venus surface platforms and the key capabilities that are expected to contribute the most to insitu Venus surface / interior related science
- Key capabilities identified include the constructs of: Time, Mobility, Smarts, and Multiple Simultaneous Measurements
- The capabilities enable unique and compelling new science
 - Example of how platform capabilities can drive science:
 - Increased surface platform lifetime can enable temporal measurements for weather / climate and seismology



KEY CAPABILITIES FOR NEW SCIENCE

- These, and other capabilities are created and/or enhanced with specific technology investments
 - Some examples of specific technologies include:
 - High-temperature power system for the Venus surface
 - High-temperature memory or processors
 - High-temperature instruments and sensors),
 - Mechanisms (actuators, drills, tools)

Critical Underlying / Supporting Technology	Capability		
	Time	Smarts	Mobility
Power (Low – 10's of watts or less)	H	H	
Power (High - 100's of watts)			H
Cooling [Will also need Power (High)]	S	H	S
High Temp Electronics / Memory / Power Processing	H	H	H
Mechanisms (Drills, Wheels, ...)			H
Autonomous Ops, Nav		H	H
State-of-art Instruments		H	

Technology Investments are Critical for Venus Surface Exploration

SUMMARY

- Venus surface related science questions are getting attention,
- There are capabilities that are expected to provide significant science,
- Those capabilities are enabled by specific technologies

More to come in the longer briefing