

# “Space for All”



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The logo for Surrey University, featuring the word "SURREY" in a bold, sans-serif font. Above the text is a stylized arc with a small orange flame-like shape at its right end, representing a satellite or a signal.

# Space is now an essential infrastructure for all national economies, their well-being and security

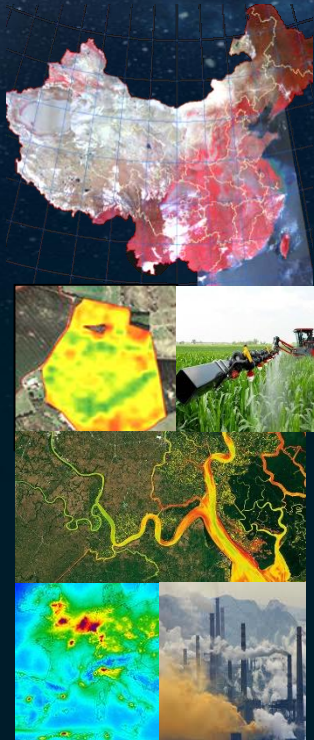
## Communications



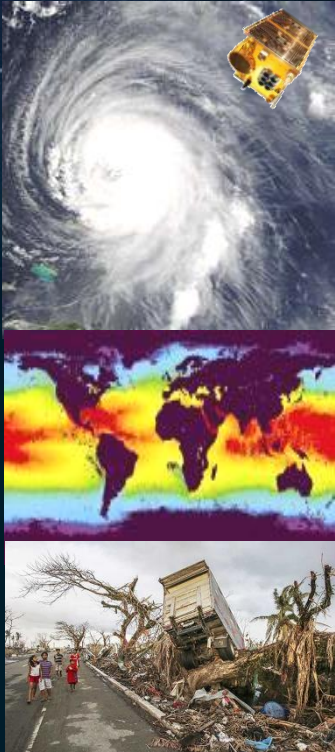
## Timing & positioning



## Land use/environment



## Climate & Disasters



# Applications of Earth Observation



Land Cover Classification



Land Use Classification



Urban Planning



Coastal Planning



Marine Spatial Planning



Ship Detection



Fisheries Monitoring



Piracy



Oil Spill Monitoring



Burn Scar Mapping



Wetland Mapping



Mangrove Mapping



Drought



Desertification



Locusts



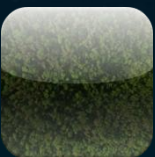
Earthquakes



Landslides



Fluvial Floods



Forestry Inventory



Deforestation



Afforestation



Forest Fires



Forest Pest and Disease Monitoring



Hydrocarbon Exploration



Subsidence



Population Density



Monitoring Ports



Base Mapping



Dredge Disposal Site Monitoring



Navigation



Water Quality



Submerged Aquatic Vegetation Mapping



Habitat Mapping



Floodplain Mapping



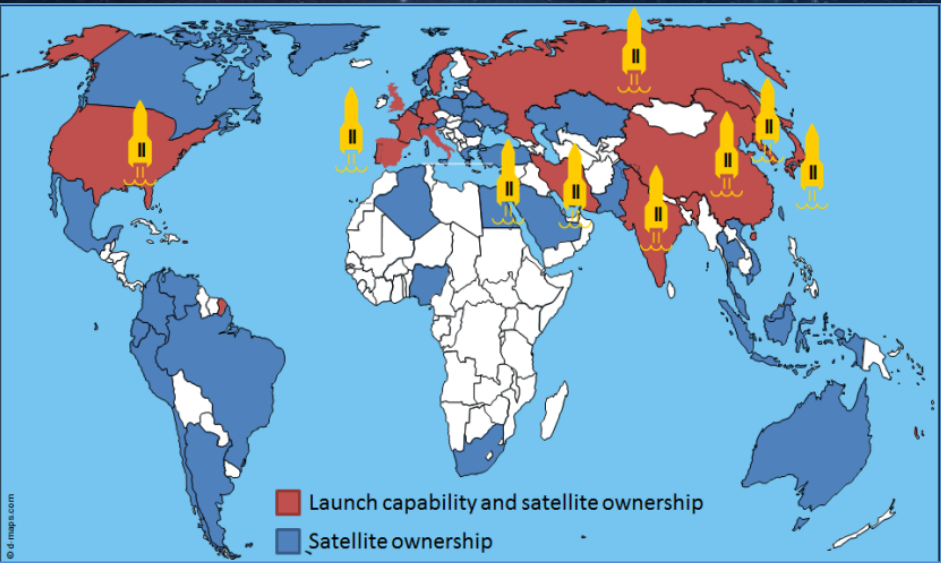
Erosion Analysis



Coral Reef Mapping

# In 2020 – everyone has access to space

Space is no longer the preserve of super-powers or the most technically-advanced or wealthy of nations ...



1960's



1980's



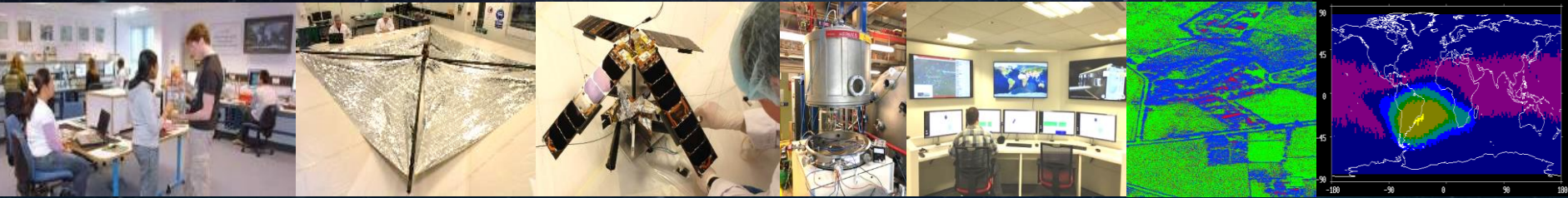
2000's



The emergence of small, highly capable but inexpensive satellites has put sophisticated space assets with reach of every nation

# SSTL & Surrey Space Centre

**UG & PG training – know-how training & transfer**

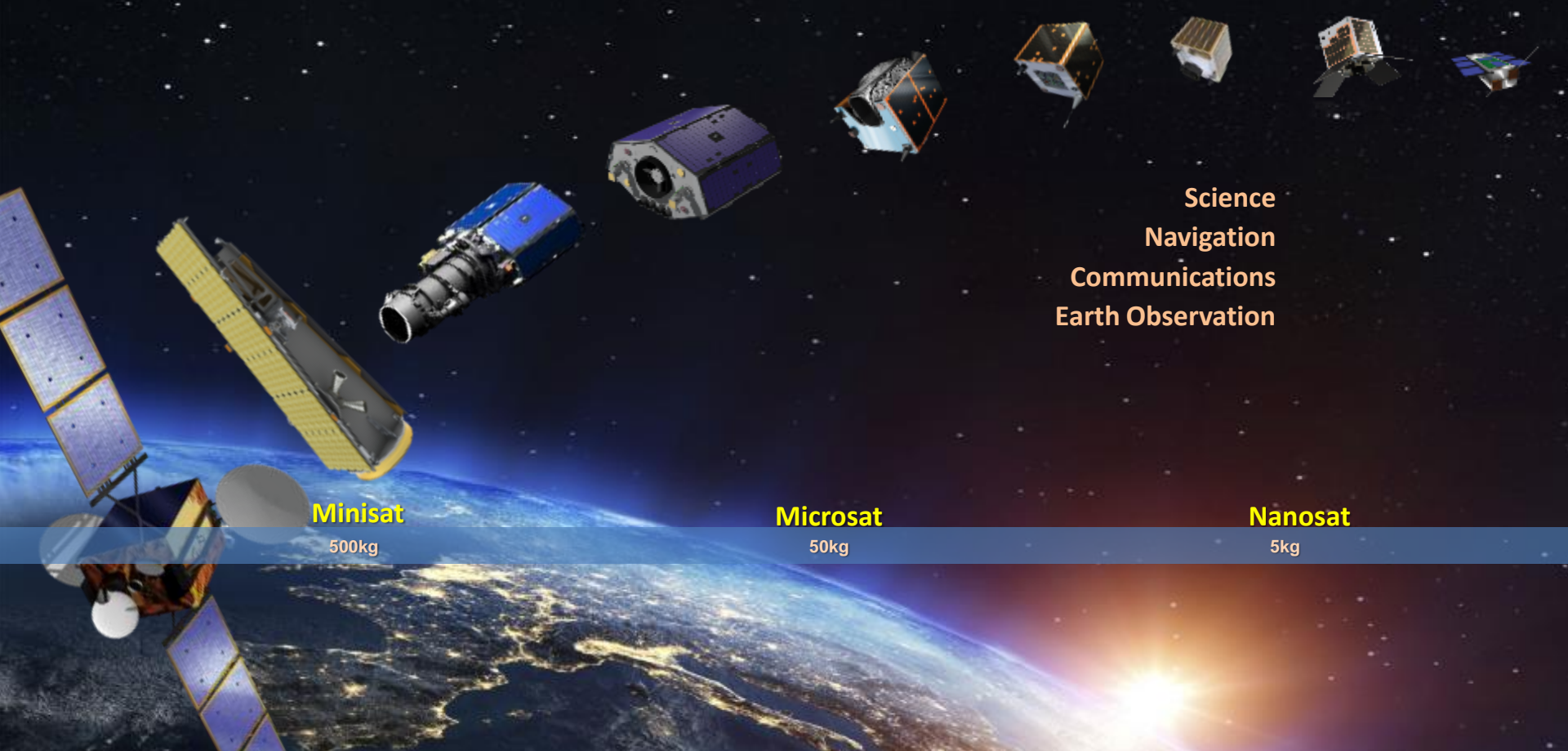


**we design them**   **build them**   **test them**   **prepare for launch**   **launch**   **operate in orbit**



**Synergy of academic research & commercial exploitation**

# Small satellites – changed the economics of space



**Minisat**

500kg

**Microsat**

50kg

**Nanosat**

5kg

Science  
Navigation  
Communications  
Earth Observation

# Space capacity training – sharing technology

	#	Partner	Start	Duration	Team size	Mission
	19	Thailand, GISTDA	2019	3y	15	THEOS-2
	18	Algeria, ASAL	2014	2y	18	ALSAT-1b
	17	Ghalam, Kazakhstan	2014	2y	15	KazSTSAT
	16	KGS, Kazakhstan	2012	2y	18	KazEOSat-2
	15	USA, NASA / MSU	2007	1y	3	Magnolia
	14	Nigeria, NARSDA	2006	2y	25	NigeriaSat-2, NX
	13	Nigeria, NARSDA	2001	2y	12	NigeriaSat-1
	12	Turkey, Bilten	2001	2y	12	BILSAT-1
	11	Algeria, CNTS	2000	2y	12	AISAT-1
	10	China, Tsinghua Uni.	1998	2y	12	Tsinghua-1
	9	Malaysia, ATSB	1996	2y	9	TiungSat-1
	8	Singapore, NTU	1995	3y	2	UoSAT-12 (payload)
	7	Thailand, MU	1995	3y	12	Thai-Phutt
	6	Chile, FACH	1994	5y	8	FASAT-A&B
	5	Japan, Fujitsu	1992	2y	3	(FJSAT)
	4	Portugal	1992	2y	6	PoSAT-1
	3	S.Korea, KAIST	1989	4y	12	KITSAT
	2	S.Africa	1989	3y	2	UoSAT 3/4/5
	1	Pakistan, Suparco	1984	5y	10	BADR-1

