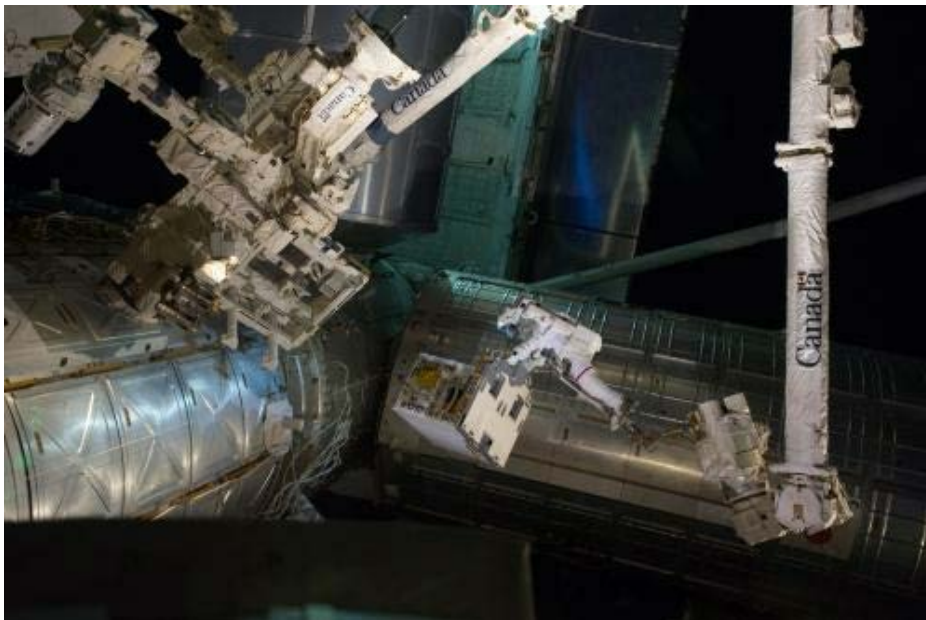


# Manufacturing In An Era of Servicing

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*Moderated by:*

**Al Tadros**  
**Space Systems/Loral**



# Geostationary Satellites – *Utopian to Reality*

- ❖ **1960 Courier**  
~ First active repeater satellites ~



- ❖ **1963 Syncom**  
~ First operational GEO ComSat ~



- ❖ **1945 Arthur C. Clarke**  
~ GEO Relay Satellites ~



- ❖ **1928 Herman Potočnik (Noordung)**  
~ GEO Radio Communication Satellites ~

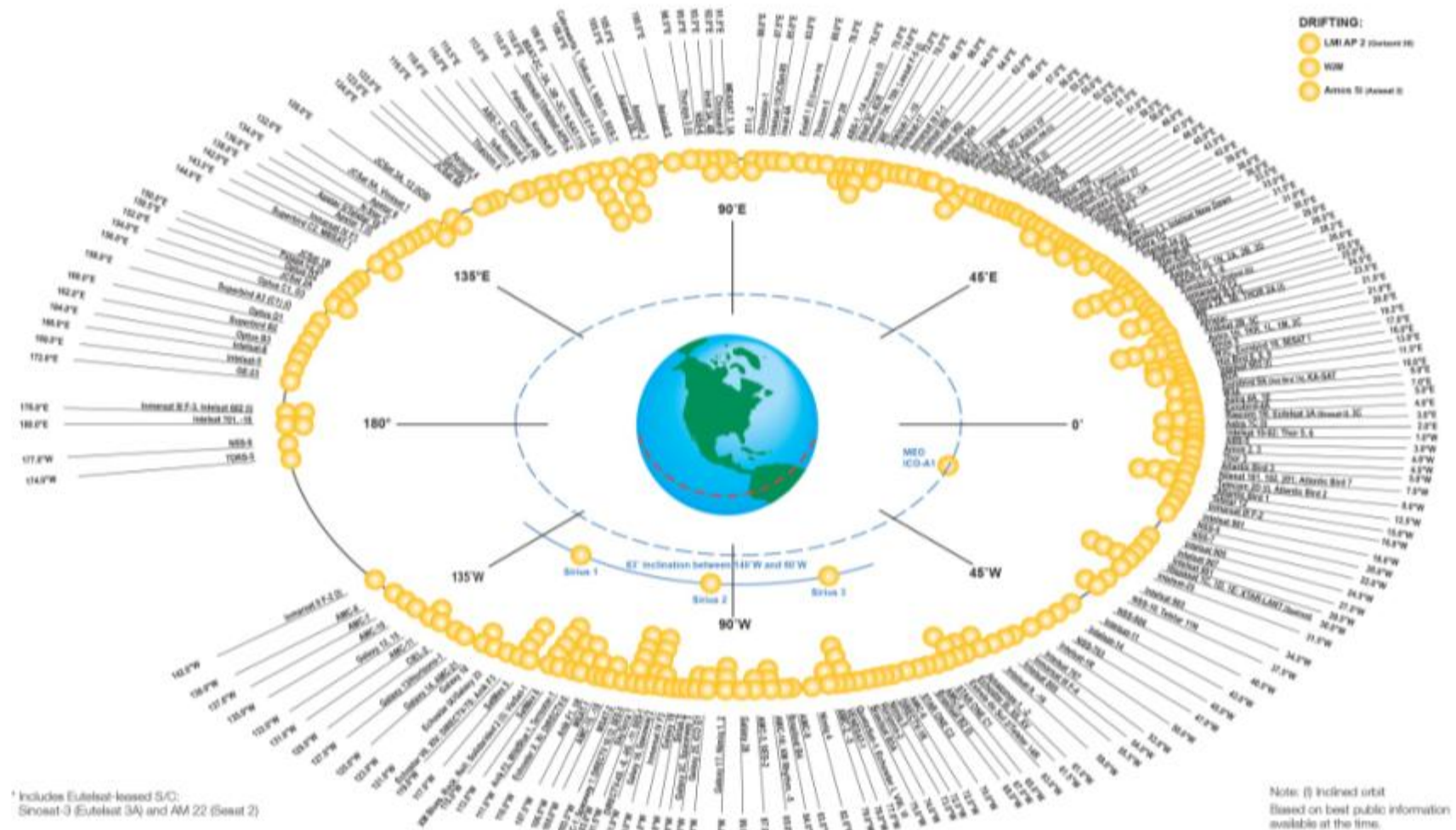


- ❖ **1923 Hermann Oberth**  
~ GEO Satellites ~



# 297 GEO Commercial Communications Satellites

~100 Additional GEO Government Satellites



\* Includes Eutelsat-leased S/C:  
Sinosat-3 (Eutelsat 3A) and AM 22 (Seast 2)

Courtesy of The Boeing Company, 31 December 2011  
[http://www.boeing.com/defense-space/space/bss/launch/980031\\_001.pdf](http://www.boeing.com/defense-space/space/bss/launch/980031_001.pdf)

# 71 GEO Commercial Satellites Under Construction

ASTRIUM		BOEING		LOCKHEED MARTIN	SPACE SYSTEMS LORAL			MDA	MITSUBISHI ELECTRIC	Orbital	THALES
 Arabsat 6B	 Astra 2E	 ABS-3A	 ABS-TBD	 Jabiru-1	 ABS-2	 Amazonas 3	 Anik G1	 Lybid	 Turksat 4A	 Azersat 1	 Afristar 2
 Astra 2F	 Astra 2G	 Inmarsat-501	 Inmarsat-502		 AsiaSat 6	 AsiaSat 8	 Astra 4B SES-5		 Turksat 4B	 HYLAS 2	 Apstar 7B
 Astra 5B	 DIRECTV 15	 Inmarsat-503	 Intelsat 21		 CMBStar	 DIRECTV 14	 Echostar XVI			 Intelsat 23	 Europasat
 Eutelsat 3B	 Eutelsat 70B	 Intelsat 27	 Intelsat-TBD		 EUROBIRD 2A Es'Hail	 Hughes Jupiter	 Intelsat 19			 MEXSAT-3	 Eutelsat 21B
 Eutelsat 9B	 Express AM4R	 MEXSAT-1	 MEXSAT-2		 Intelsat 20	 Intelsat DLA-1	 Intelsat DLA-2			 OHO-1	 Eutelsat 7B
 Express AM7	 Inmarsat XL	 Satmex 7			 NBN Co 1A	 NBN Co 1B	 Optus 10			 SES-8	 Sicral 2
 Measat 3b	 SES 6	 Satmex TBD			 Satmex 8	 Sirius FM-6	 Star One C4			 Star One C3	 Turkmenistansat
 Skynet 5D		 SkyTerra-2			 TerreStar-2	 THOR 7			 Thaicom 6	 Yamal 402	

# ***Manufacturers Perspective***

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## **Panelists**

- ❖ **John D. Schumacher**      VP, Space, EADS North America
- ❖ **Barry Noakes**      Chief Engineer, Lockheed Martin Commercial Space Systems
- ❖ **Richard A. Currier**      VP and CTO, Loral Space and Communications Inc.
- ❖ **Christopher Richmond**      SVP, Orbital Sciences Corp.
- ❖ **Eddie Kato**      CEO, Thales Alenia Space North America, Inc.