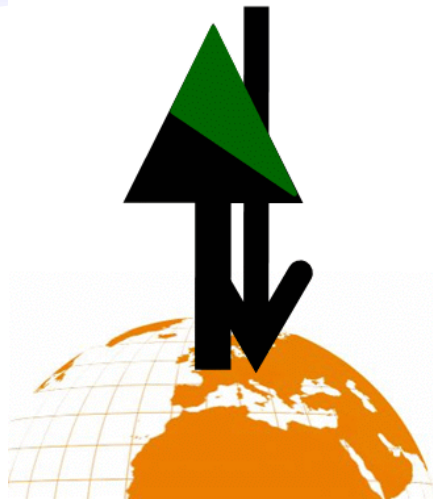


Payloadproject.com



GENERAL

Initial situation

Content:

About the project	2
Strategic focus on engines	3
Industrialization - wave model	4
Raw material demand - growth	5
Untapped raw material reserves?	6
Starting places and start-ups - examples	7
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Market, launches and payload spent	9
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→ PRIVATE INITIATIVE FOR THE ENGINEERING RECOVERY OF PATENT RIGHTS AND THEIR MARKETING IN THE AEROSPACE SECTOR

Patentanmeldung
Erfurt, den 08.03.2021

Mathias Herrmann
Zellendorfsstraße 6
99086 Erfurt

Zündkonzept für Triebwerke und Raketenantriebe: möglichst gerichtete Anregung und Zündung mittels angepasster elektromagnetischer Anregung (z.B. Radiowellen, Mikrowellen, Magnetwellen) und Metallzusätzen (z.B. ferromagnetischer Stoffe und Katalysatoren) zur Erhöhung des energetischen Wirkungsgrades und Schubes

Die Erfindung betrifft eine Vorrichtung, bzw. Konzept entsprechend dem Oberbegriff des Anspruchs I
(Anwendungsgebiet: Luft- und Raumfahrt)

Übersicht relevanter Unterlagen:

Nr.	Titel	Patentdatum
AU		
AU 2016 259 366 A1	IGNITION APPARATUS, INTERNAL-COMBUSTION ENGINE, IGNITION PLUG PLASMA EQUIPMENT, EXHAUST GAS DEGRADATION APPARATUS	17.11.2016 (angemeldet) 08.12.2016 (offengelegt)

den 07.02.2021

Reaktionskonzept für Triebwerke zur katalytischen Beschleunigung der Reaktion und Austrittsgeschwindigkeit bei Reduzierung der Reaktionstemperatur (Triebwerk-Konzept)

Die Erfindung betrifft eine Vorrichtung entsprechend dem Oberbegriff des Anspruchs I.
Anwendungsgebiet: Luft- und Raumfahrt

Übersicht relevanter Unterlagen

Nr.	Titel	Patentdatum
DE 195 00 997 C1	Verfahren zur Herstellung einer Katalysatoranordnung	14.01.1995 (Anmeldung)



Antrag auf Erteilung eines Patents

1

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0152 02 68 78 96

STATUS I.Q 2021:

- DYNAMIC DEVELOPMENT IN PRIVATE SPACE TRAVEL

LAST PROJECT:

- GOAL: MORE PAYLOAD SHARE OF CHEMICAL ROCKETS IN LAUNCHES INTO ORBIT

- PRACTICAL RESEARCH AND DEVELOPMENT

- 6 PROVISIONAL PATENTS FILED

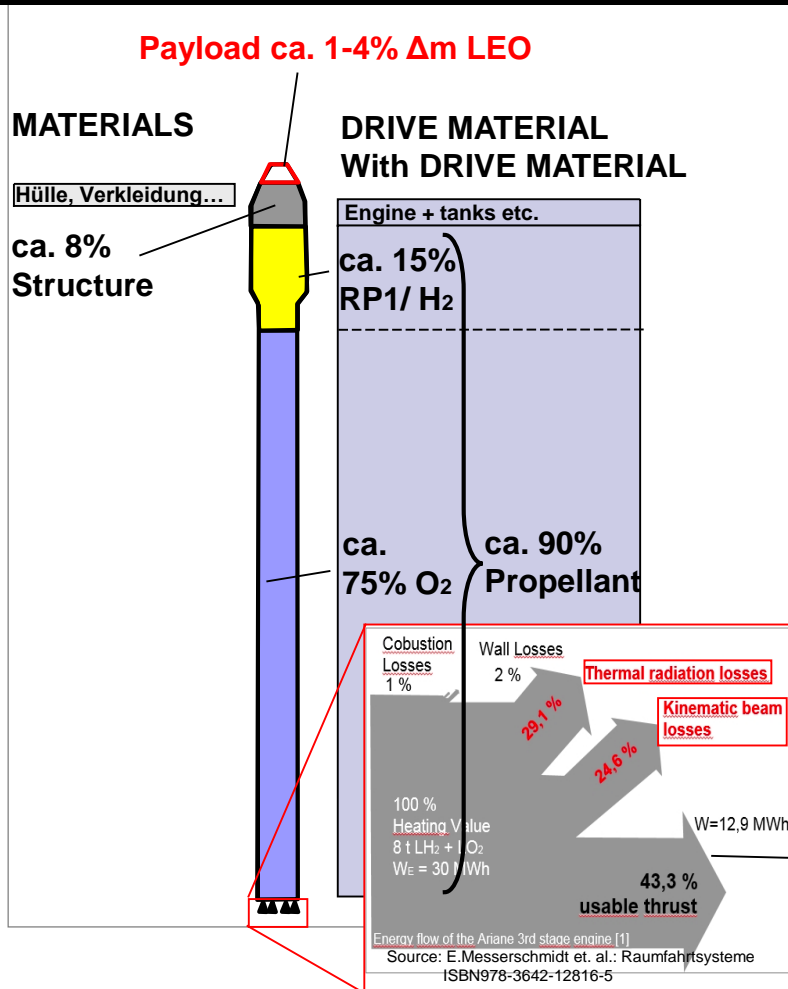
- TARGET GROUP: CIVIL SPACE INDUSTRY, MANUFACTURERS, ROCKET LAUNCH PROVIDERS

- OPEN TO INVESTORS, PARTNERS, SPONSORS

- II.Q 2021 INTENSIVE DEVELOPMENT OF FURTHER STEPS
 - FINAL PATENT DOCUMENTS
 - CONTINUATION AND SUPPLEMENTATION

→ focus on drives to enable cheaper materials

ACTUAL state of the art chem. Rockets 2021



Significance of the drive:

simplifying: effects of the drive
approx. 20x higher than proport. of materials

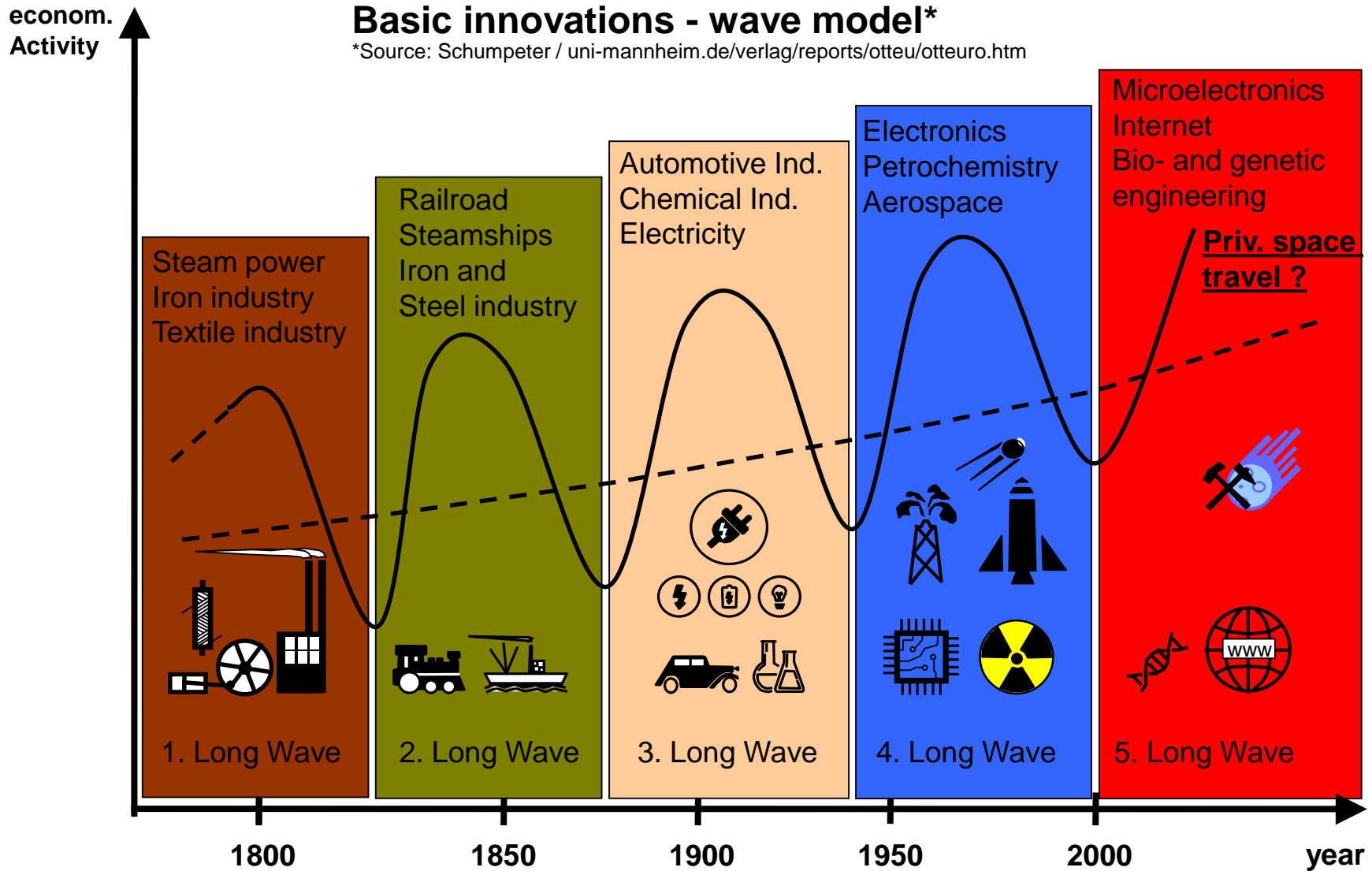
- of the total mass of a rocket approx. 90 % consist of propellant and only approx. 8 % of structure (with propulsion!)

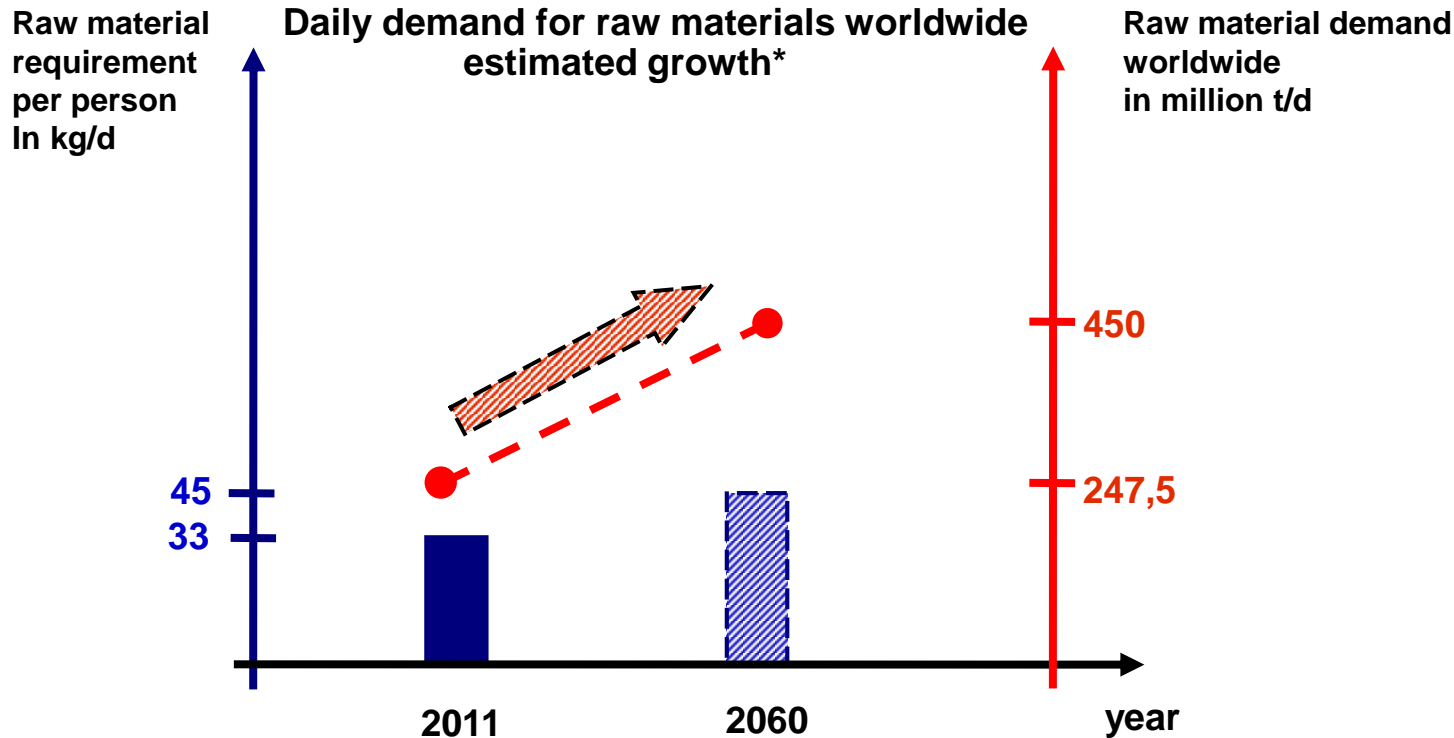
- Steel, for example, is roughly approx. 50x cheaper than CFRP (carbon fiber reinforced plastics)

→ Material concept of the "StarShip" (SpaceEx).

→ higher econ. effects and probability of success

for large chem. approx. 40-70 % of the of the power input can be used as thrust





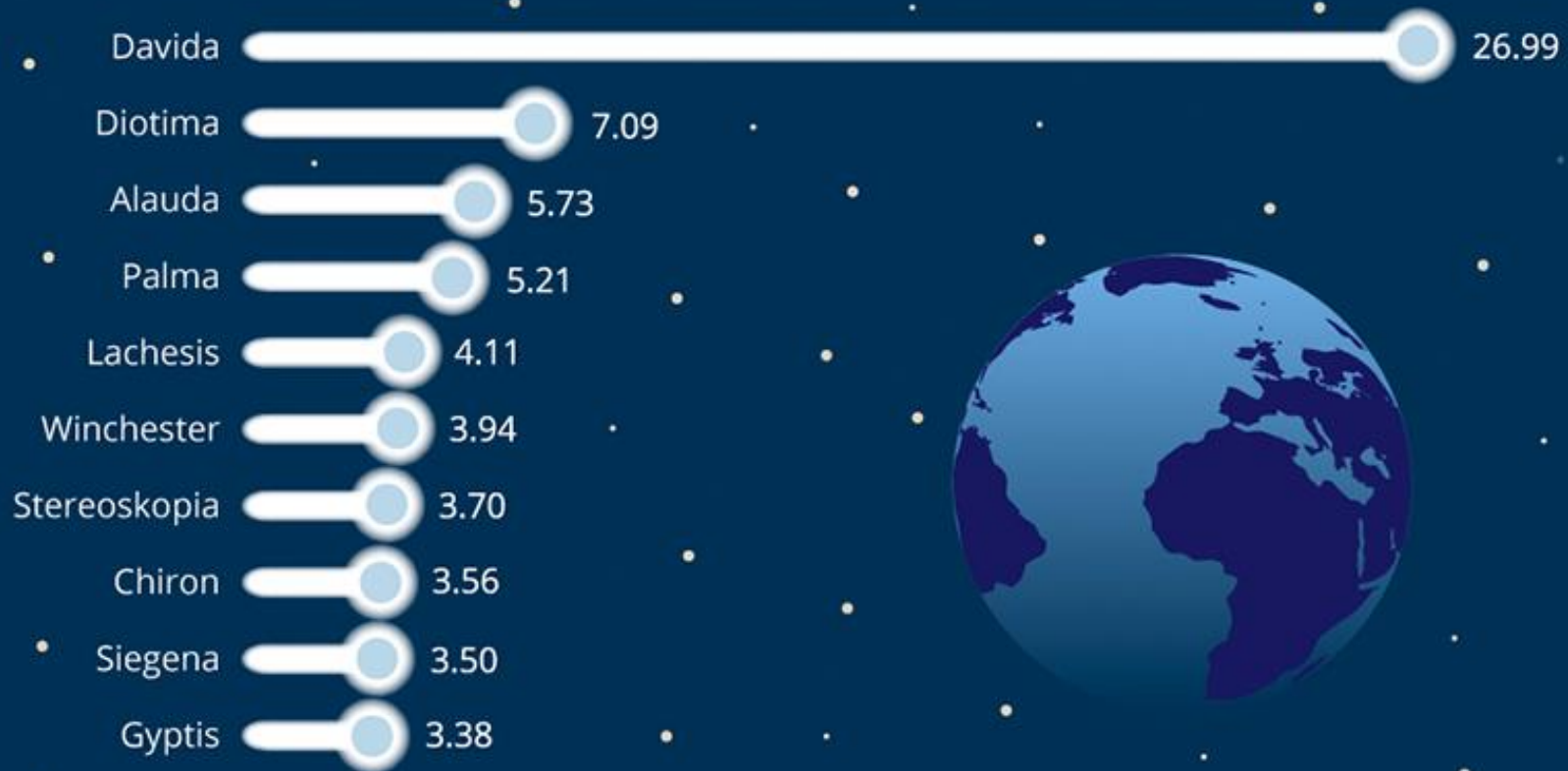
*Source: OECD study at predicts
10.000.000.000 People worldwide until 2060

At the same time, available land for mining is decreasing:

- Approx. 33% increase in population estimated with expected higher standard of living.
- Higher demands on nutrition, intensification of land use
- Additional settlements / roads / infrastructure
- higher prosperity expected also in current developing countries

The Colossal Untapped Value Of Asteroids

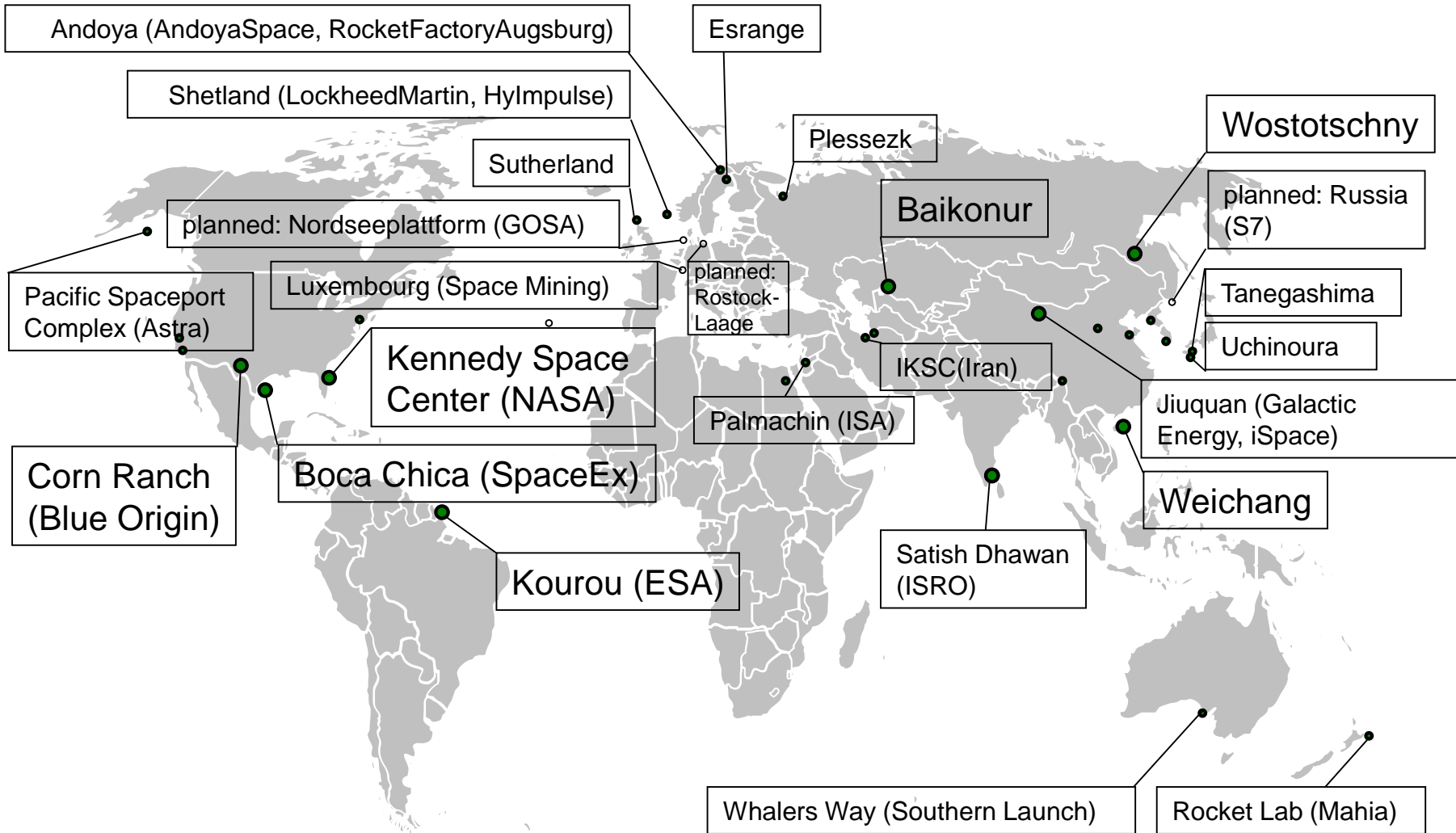
The most valuable asteroids in our solar system (in quintillion U.S. dollars)*

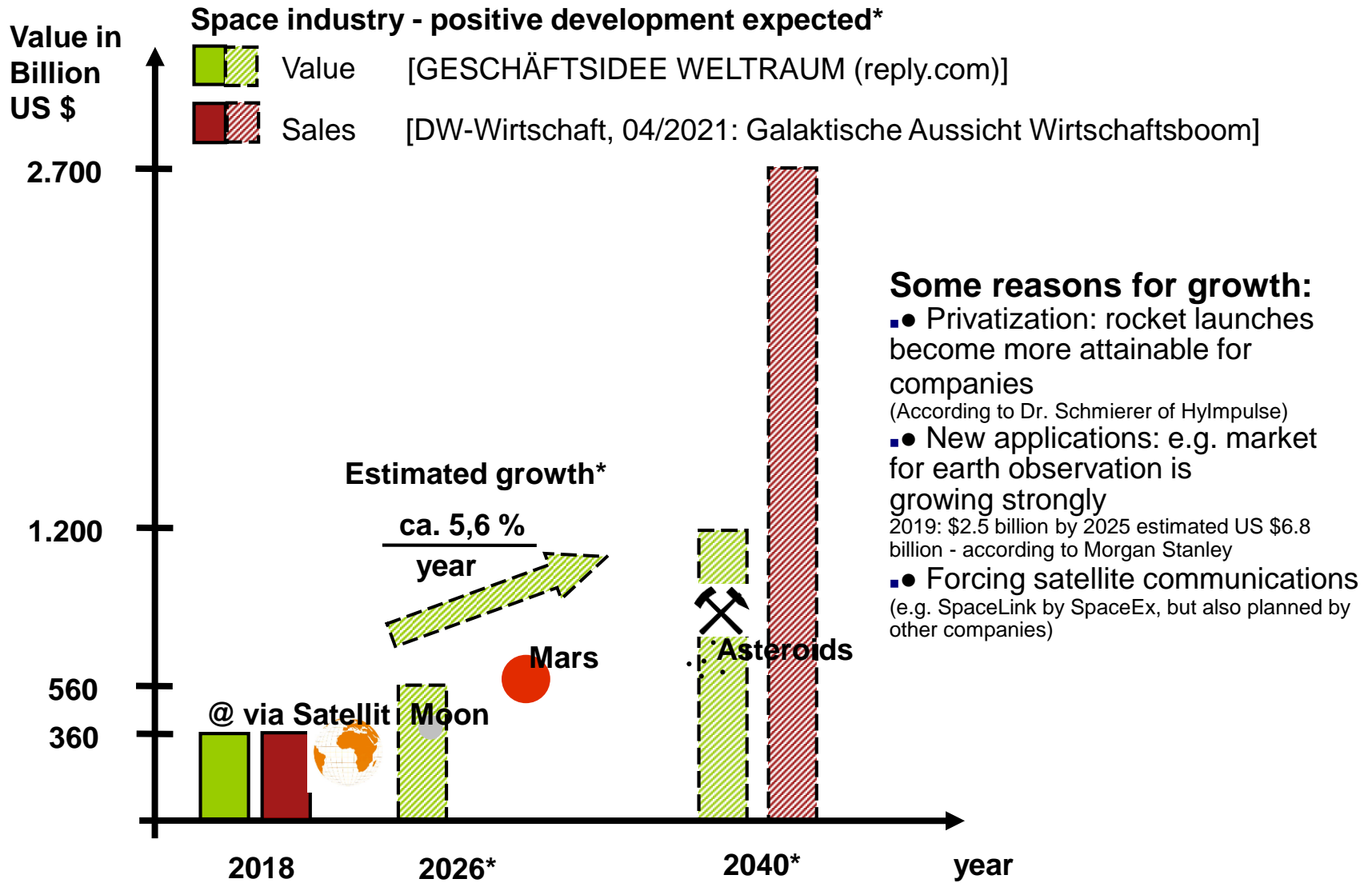


* Asteroids in the belt that lies between Mars and Jupiter.
Value based on mineral and element content.

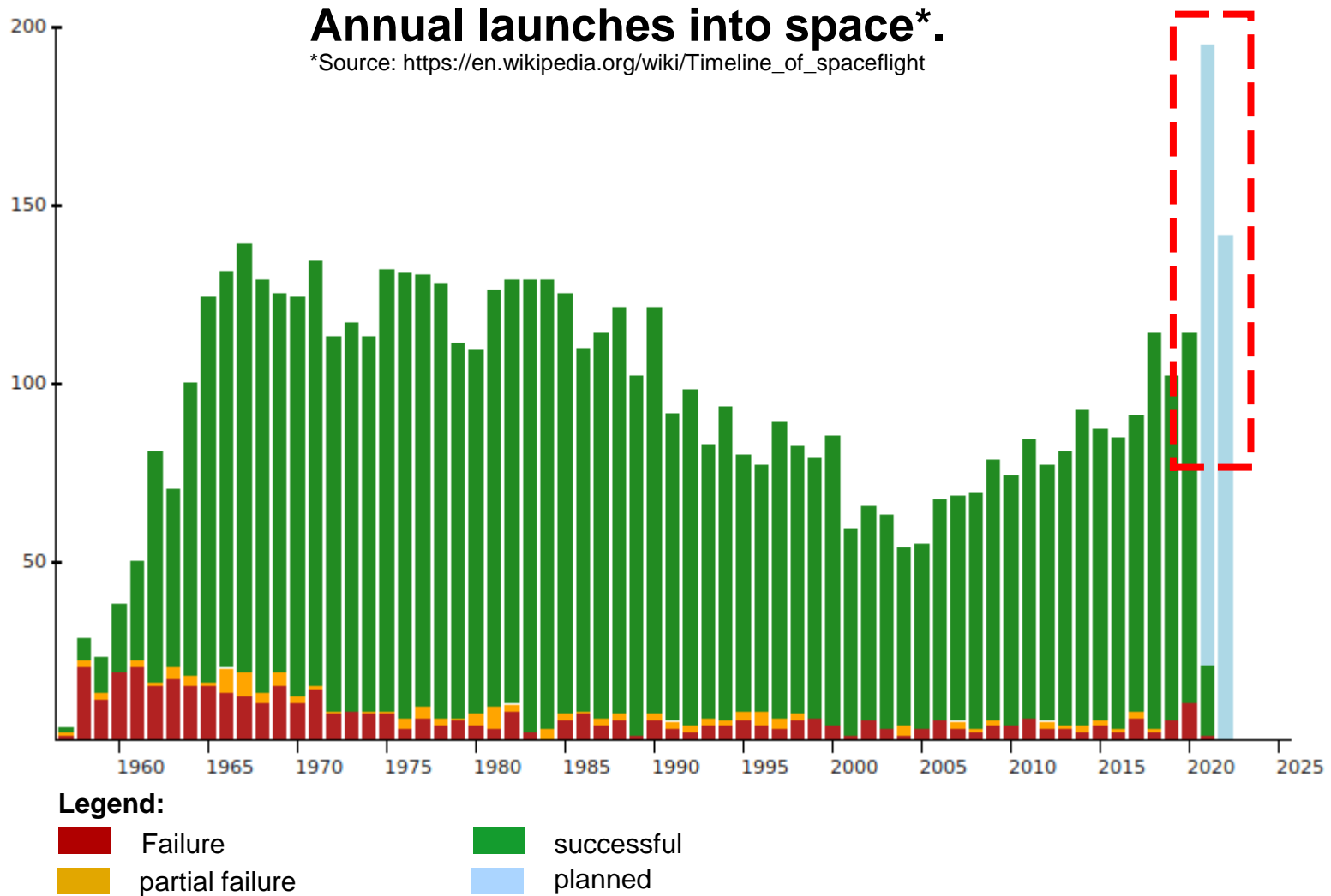
Quintillion = 1,000,000,000,000,000,000

Source: Wired/Valerio Pellegrini





Additional boost in the market from privatization of space travel



State of the art 2021 - Rocket launches from earth with chem. Rockets

economic:

→ Radical innovations necessary to keep up the pace of development and remain competitive

technical:

→ Payload share still limited!

approx. 1-4% payload for Low Earth Orbit (LEO) - low earth orbit

for smaller rockets tends to be lower

Type	Electron (Rocket Lab)	Falcon 9 (SpaceX)	planned Starship (SpaceX)
Propellant	LOX, RP1	LOX, RP1	LOX, Methan
Take-off mass [t]	13	541	5.000
Payload LEO [t]	0,3	23	>100
Payload LEO [%]	2,3	4,2	ca. 2,0
Cost [US \$ million]	7	62	2
spec. cost [\$/kg]	23.333	2.719	20 (Target: complete recycling)

→ Goal of Lastprojekt.de: more payload share for rockets