



Starlink

From 3G to 6G module

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SpaceX history

405
Total
Launches

367
Total
recoveries

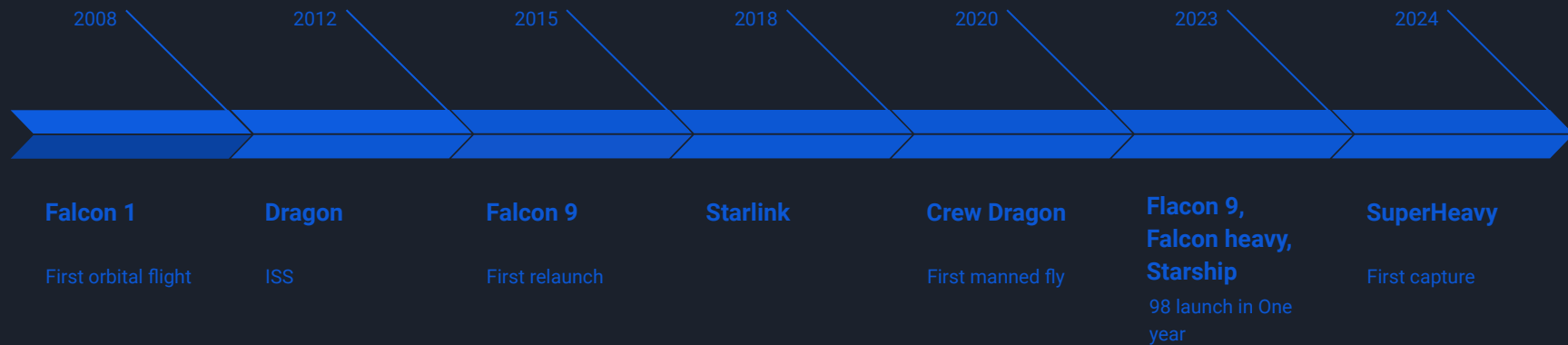
339
Total
Relaunch

2002
SpaceX birth

2012-2020
First Private
Company able
to join ISS

Elon Musk

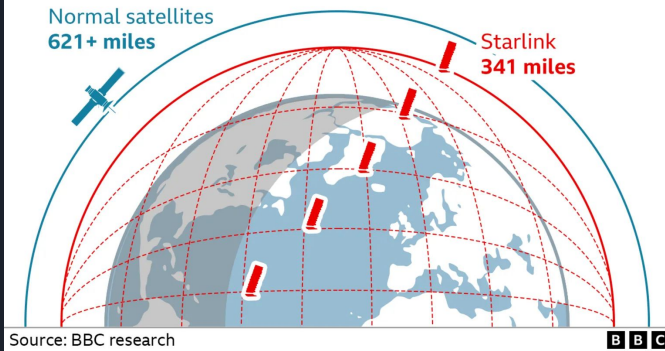
SpaceX history



Behind Starlink

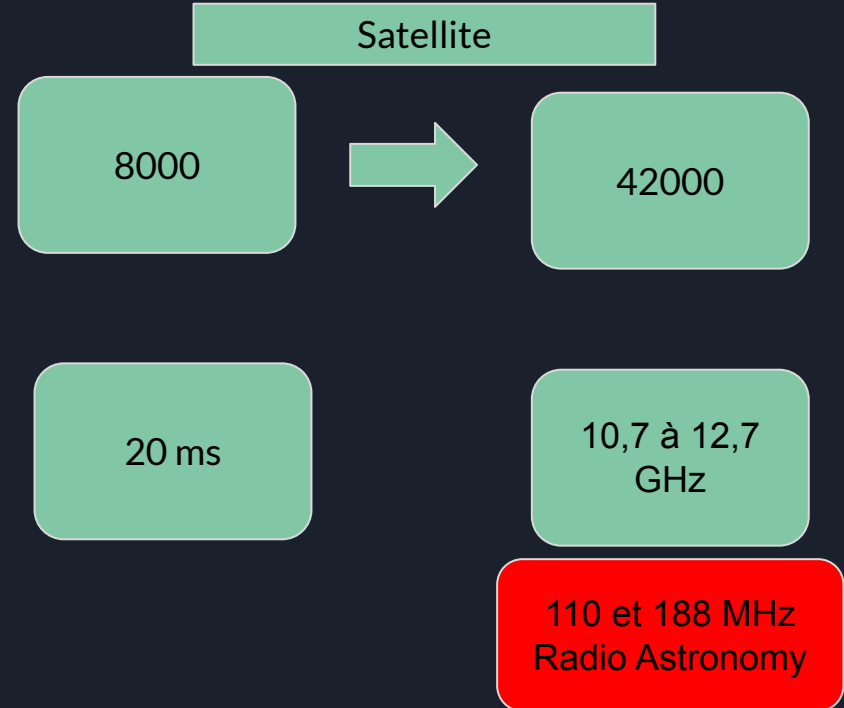
Starlink operates in low orbit

Low-Earth orbit satellites can link to Earth faster, but more are needed to provide coverage



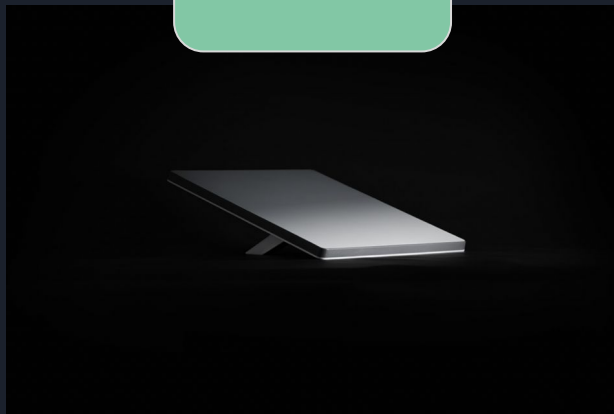
Img.1

<https://www.bbc.com/news/technology-62339835>
<https://www.ouest-france.fr/sciences/espace/explosion-du-nombre-de-satellites-comme-starlink-menace-la-terre-et-sa-couche-dozone-1448088e-2fba-11ef-bdf9-9b702c715c92>
<https://www.futura-sciences.com/tech/actualites/ondes-satellites-starlink-parasitent-frequence-radio-dediee-astronomes-106461/>



Behind Starlink

Super easy
installation



Img.2

home

40 euro in
France

Without
engagement

roaming

40 euro

50 GO

Boat

287 euro

50 GO

<https://payloadspace.com/starlink-mini-impact-and-rapid-terminal-iteration-payload-research>
<https://www.starlink.com/fr/residential>

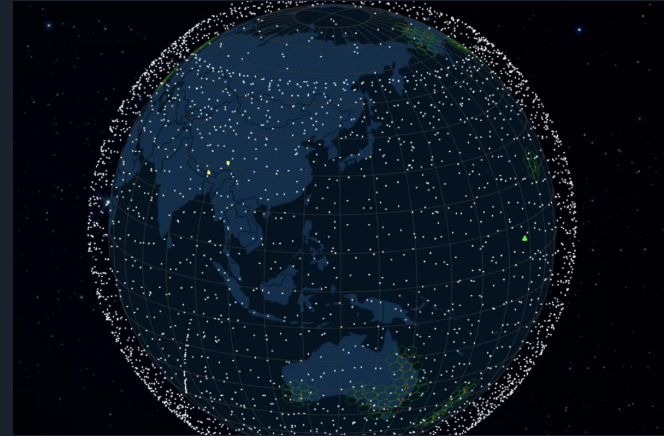
Starlink: Reaching Goals and Benefits

- Global Connectivity
- Low-latency internet
- Emergency response support



Img.3

<https://www.nytimes.com/2023/02/09/world/europe/elon-musk-spacex-starlink-satellite-ukraine.html>

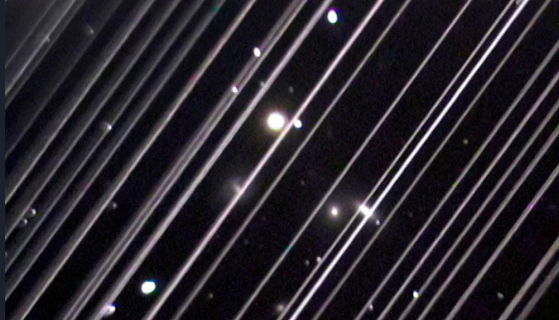


Img.4

<https://www.presse-citron.net/starlink-le-dilemme-spatial-entre-innovation-et-pollution-de-lorbite/>

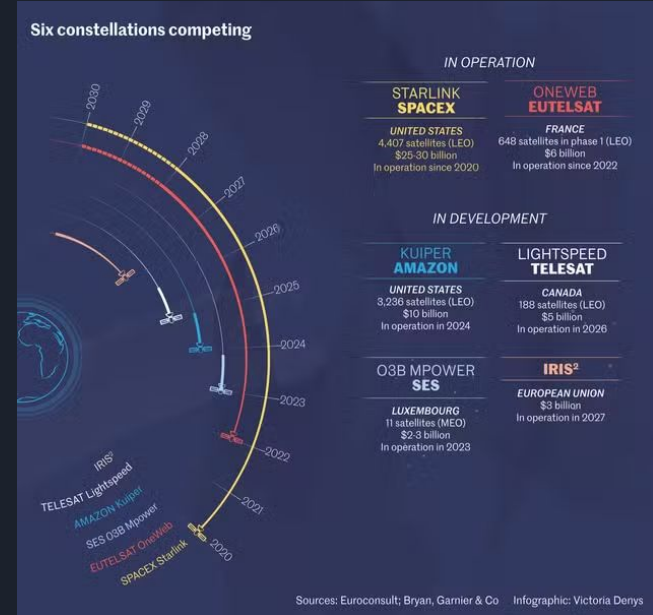
Technical and Commercial Challenges

- Deployment Cost and Profitability
- Competition and Adapting to the Market needs
- Space Pollution and Congestion



Img.5

<https://www.pourlascience.fr/sd/astronomie/starlink-un-cauchemar-pour-les-astronomes-18885.php>



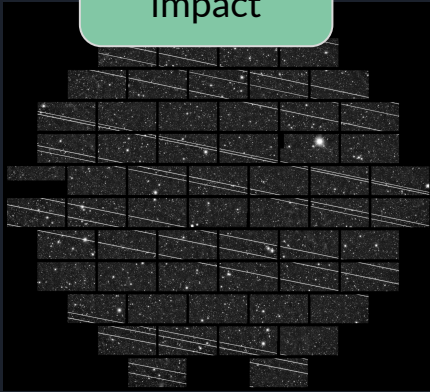
Img.6

https://www.lemonde.fr/en/economy/article/2022/12/26/elon-musk-s-starlink-and-the-battle-of-satellite-constellations_6009120_19.html

Environmental Impact

Luminous
impact

Img.Z



Disrupt astronomical observations and
degrade data quality

Challenges in astronomical research
and object detection

Anti-reflective coatings and adjusted
altitudes to reduce satellite visibility

<https://france-science.com/cnes-spacex-trouve-un-accord-avec-la-national-science-foundation-pour-reduire-limpact-des-satellites-starlink-sur-lastronomie/>

Ethical and Sovereignty Issues

Img.8



<https://www.futura-sciences.com/sciences/questions-reponses/satellite-satellites-to-urgent-autour-terre-706>
<https://france-science.com/cnes-spacex-trouve-un-accord-avec-la-national-science-foundation-pour-reduire-limpact-des-satellites-starlink-sur-l-astronomie>

Space Monopolization: Concerns over orbital space managed by private companies

Data Sovereignty: Implications for data control and space governance.

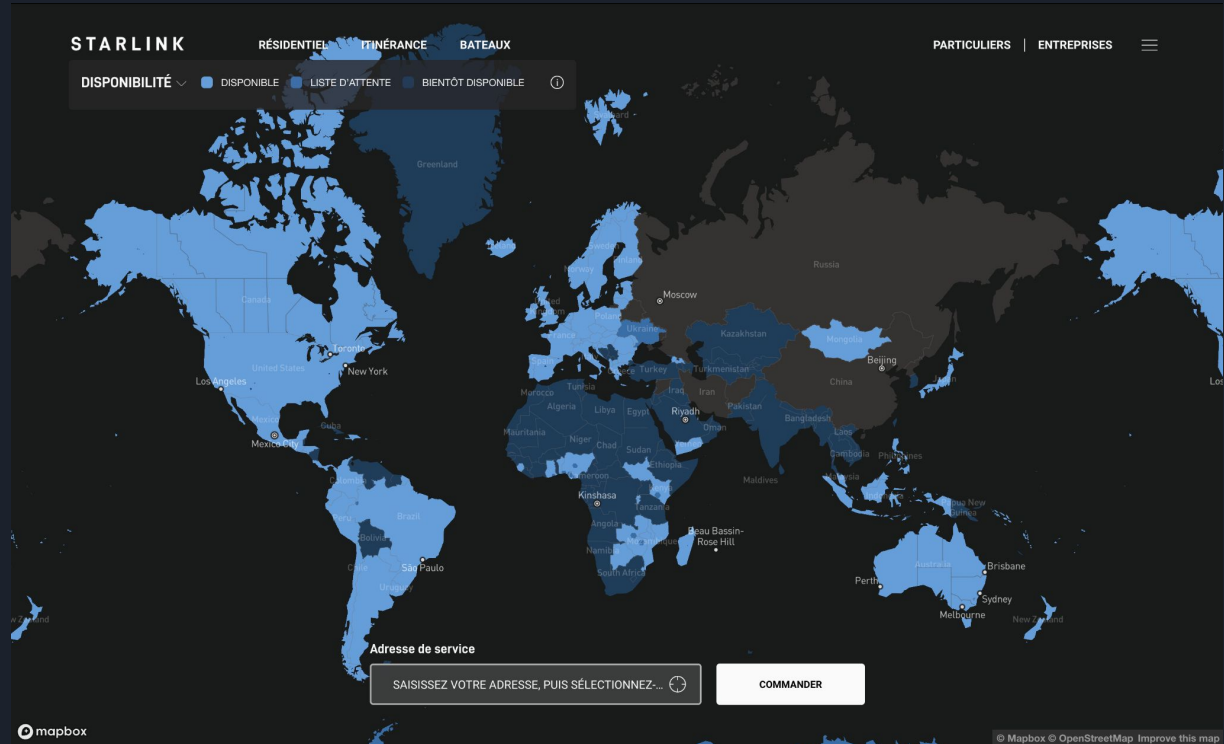
Reactions: Criticism from organizations like the International Dark-Sky Association, urging for global regulation.

Federal Communications Commission(FCC)

Starlink deployment and global access

North America, Europe, parts of South America, Asia, and Australia, with active expansion in underserved regions.

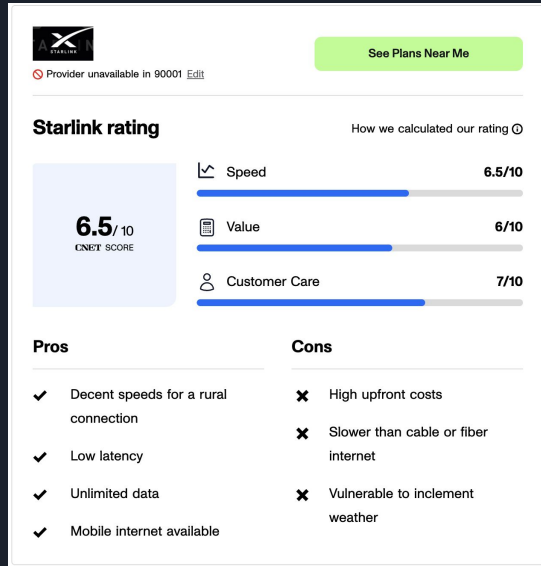
Remote access :
Boat, forest,
desert ...



<https://www.starlink.com/>

Img.9

User feedback



Img.10

<https://www.cnet.com/home/internet/starlink-internet-review/>

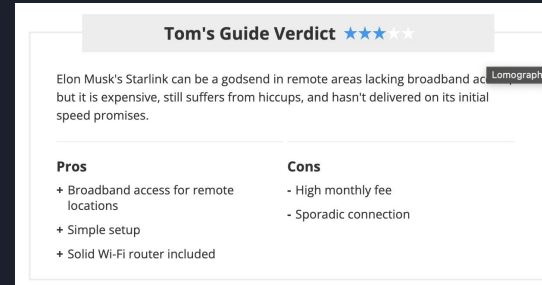
<https://fr.trustpilot.com/review/starlink.om>



Img.11

Wifi -3m

Service Client mauvais



Img.12

https://docs.google.com/presentation/d/1L8373TltxYLFzDnTrNrXjrlQ_7S71tsbxMSdpjKGo/edit#slide=id.g314e0c14714_1_100

User feedback



Lise_in_Oz 8 posts

★★★★★ 1w

Middle of the desert phone signal — Worth its weight in gold. My husband spends a lot of his working hours in the desert in no phone reception areas. Now instead of waiting for the next town, he call from the middle of the desert. Clear and unbroken calls.



Kim S.

★★★★☆ 2w

Vote ...

Weather damage warning — Best internet speeds we have had. Beware though, the warranty does not cover weather related incidents! Our system was 3 months old when a hailstorm hit and put a hole in our dish. I put in a ticket about the incident, 5 days later they responded and said we would need to purchase a new one. We work from home and with having no internet, the response time was slow. It would be helpful if they were more contactable.



Linda Perth, WA 3 posts

★★★★☆ 2w ✓ Verified

Worst. Customer service — Worst customer service I have experienced in along time. They refunded money into a closed account. The paperwork they require to prove account no longer exists is impossible and onerous. IT IS ALMOST IMPOSSIBLE TO SPEAK TO A HUMAN BEING. Returning the unit was also the same ridiculously hard process. They also charge fees from the moment you get the unit, not when it is actually installed so if you have building issues, you are still being charged even if you are not using Starlink yet. They do not make this clear.



Peter K. North Queensland, QLD

★★★★☆ 3w

very poor — purchased a mini and all the information i was given was how quick and easy to set up , well seven hours later still nothing , will return for refund , never touch this product again , rubbish and zero help.

<https://www.productreview.com.au/listings/starlink>

Img.13

Potential Developments for the Long Term

- Increasing the Capacity
- Engineering New Features
- Integrating other SpaceX projects
- Working with Governments



Img.15



Img.14

https://fr.le360.ma/economie/spacex-rencontre-des-difficultes-dans-le-deploiement-de-ses-satellites-starlink-v2_MEGFQKT2UBB7TBFPSSNZN2PNS4/

<https://www.20minutes.fr/high-tech/3051919-20210601-5-choses-que-vous-ignoriez-au-sujet-de-starlink>



Conclusion

- Internet access, all around the World, with terrestrial network equivalent quality
- Expensive solution, not yet in a competitive market
- Important environmental impact
- Deployment threatened by upcoming regulations
- Mixed user feedback
- Still some margin for progress and developments



Sources

<https://www.researchgate.net/publication/377231331> The SpaceX Starlink Satellite Project Business Strategies and Perspectives

<https://www.arcep.fr/la-regulation/grands-dossiers-thematiques-transverses/lempreinte-environnementale-du-numerique/evenement-satellites-et-environnement.html>



Contents

- Introduction à Starlink et SpaceX

Brève présentation de SpaceX et son fondateur, Elon Musk. Pourquoi Starlink a été créé : objectif de fournir un accès internet global, surtout dans les zones reculées.

- Fonctionnement de Starlink

Explication du principe de la constellation de satellites en orbite basse (LEO). Différence avec les satellites géostationnaires traditionnels (temps de latence, couverture). Les composants principaux du système : satellites, antennes au sol, terminaux utilisateurs.

- Objectifs et bénéfices de Starlink

Démocratisation de l'accès internet dans les zones rurales et isolées. Avantages par rapport aux technologies actuelles (câbles sous-marins, fibre optique, 4G/5G). Potentiel pour les services d'urgence et pour la connectivité en mer et en avion.

- Défis techniques et commerciaux

Coût élevé des lancements et de la fabrication de satellites. Gestion de l'encombrement spatial et risque de collisions (règlements en matière de débris spatiaux). Problèmes de latence et de stabilité par rapport à la fibre optique. Concurrence avec d'autres entreprises, comme OneWeb et Amazon Kuiper.

- Impact environnemental et sociétal

Débat autour de la pollution lumineuse pour les astronomes. Les mesures de SpaceX pour minimiser l'impact visuel (peinture spéciale, altitude plus basse). Les critiques autour de la monopolisation de l'espace et des implications en matière de souveraineté des données.

- Déploiement et accès aux utilisateurs

État actuel du déploiement mondial, les pays et régions couvertes. Les options de coût et d'abonnement pour les utilisateurs. Témoignages et retours d'expérience des utilisateurs actuels, avantages et limitations.

- Avenir et développements futurs

Les plans pour augmenter la capacité du réseau (nombre de satellites prévus, couverture mondiale). Innovations possibles pour améliorer la bande passante et la latence. L'ambition de connecter Starlink avec d'autres projets SpaceX, comme la mission vers Mars.

- Conclusion