- **PENDANT LE DS (1h30, voire plus si besoin)**

- Lire les DOCS 3 & 4 (un article et un doc iconographique)
- Prendre des notes dans le tableau
- Trouver une problématique et faire un plan **détaillé**
- Rédiger une synthèse en 300 mots $\pm$ 10%

Pour ce devoir, l'introduction devra comporter

- Une accroche
- La présentation des documents (natures, source, date)
- Une problématique

- **A LA FIN DU DS**

Rendre

- Votre tableau
- Votre plan détaillé
- Votre synthèse

PLAN DETAILLE

1- Economy
2- Evolution
3- Future

Title: Space Industry : a positive or negative evolution?

Intro :

Accroche : Through years, space exploration has became a new to discover and ex

4 documents : 2 informative article for The Conversation,
1 graph on Nasa expenses The Guardian
1 caricatural drawing on open-access to spa

Problematique : How is the space exploration evolving through the years?

I / Dangerous evolution of spaceval (Past vs. Future)

- Access to space : open to public and private
  - countries : Doc 4
  - money : Doc 4 - 1 - 2
  - tourism : Doc 3 - 4 - 2
- Increase of problems :
  - pollution : Doc 4 - 1
  - over-exploitation : Doc 4 - 1 ~ 2
  - competitive and commercial : Doc 3 - 2

II / Positive evolution of space exe

- Exploitation great for Earth
  - ressources depleting on earth : Doc 1
  - weather - telecom - water ice : Doc 4 - - metals
- Reducing costs :
  - Renewable energies : Doc 1
  - avoid mistakes : Doc 1 - 4
  - cost : Doc 2 -
- Dulp of science : Doc 4 - Doc 2
  ↳ investment

III /

NCLUSION : Space industry is evolving and is becoming and less

Renewed space rivalry between nations ignores a tradition of cooperation
Scott Shackelford, *The Conversation*, January 10, 2019

Since the breakup of the Soviet Union space governance has only gotten more complicated due to an increasing number of space powers, both public and private. […]

The list of leading space powers has expanded beyond the U.S. and Russia to include China, India, Japan and members of the European Space Agency – especially France, Germany and Italy. Each regularly spends over US$1 billion on their space programs, with estimates of China's space spending surpassing $8 billion in 2017, though the U.S. continues to spend more than all other nations combined on space related efforts. But space has become important to every nation that relies on everything from weather forecasting to satellite telecommunications. By 2015, the global space industry was worth more than $320 billion, a figure that is expected to grow to $1.1 trillion by 2040.

Private companies, such as SpaceX, are working to dramatically lower the cost of launching payloads into low Earth orbit, which has long stood at approximately $10,000 per pound. Such innovation holds the promise of opening up space to new development. It also raises concerns over the sustainability of space operations.

At the same time, the Trump administration's public desire to launch a Space Force has fueled concerns over a new arms race, which, if created, could exacerbate both the issues of space weapons and debris. The two issues are related since the use of weapons in space can increase the amount of debris through fragments from destroyed satellites. For example, China performed a successful anti-satellite test in 2007 that destroyed an aging weather satellite at an altitude of some 500 miles. This single event contributed more than 35,000 pieces of orbital debris boosting the amount of space junk by approximately 25 percent. […]

The tragedy of the commons scenario refers to the "unconstrained consumption of a shared resource […] by individuals acting in rational pursuit of their self-interest," according to commons governance expert Brett Frischmann. This can and often does lead to destruction of the resource. Given that space is largely an open-access system, the predictions of the tragedy of the commons are self-evident. Space law expert Robert Bird, has argued that nations treat orbital space as a kind of communal pasture that may be over-exploited and polluted through debris.

But luckily, there is a way out of this scenario besides either nationalization or privatization. […] In some cases, groups can and do self-organize and cooperate to avoid tragic over exploitation. […]

Coordination between sovereign nations is possible, as was shown in the golden age of space law [in the 1960s and 1970s]. By finding common ground, including the importance of sustainable development, we can ensure that humanity's development of space is less a race than a peaceful march – not a flags and footprints mission for one nation, but a destination serving the development of science, the economy and the betterment of international relations.

What Is Tragedy of the Commons?

The tragedy of the commons is an economics problem in which every individual can consume a resource, but at the expense of every other individual.

What would happen if every shepherd, acting in their own self-interest, allowed their flock to graze on the common field? If everybody does act in their apparent own best interest, it results in harmful over-consumption (all the grass is eaten, to the detriment of everyone).

The problem can also result in under investment (who is going to pay to plant new seed?), and ultimately total depletion of the resource.

1	2	3	4
Aus : space is a multimillion dollar market It creates tens of thousands of jobs It can provide precious resources that are depleting on earth. Future : - There could be less consumption and more conservation - Or we need to find more resources : where space exploration comes in. But the space industry has to be sustainable Space X = innovative, but not for environmental reasons → merely seeking to cut costs Aus : space industry should be sustainable right away to avoid having to fix mistakes later.	Since the 1960s = Nasa expenses have fallen significantly Since the 2000s = private startups have been created and investment has been on the rise.	It doesn't mean anything to be an astronaut anymore Anybody can be one (not only billionaires, judging from the appearance of the couple in the cartoon)	Space governance = complicated issue. Space = important to every nation Worth billions of dollars Private companies seek to lower the costs ➔ But raises the question of sustainability Concerns about a new arms race Also : too many debris Tragedy of commons = consume a resource at the expense of other individuals Alternative = possible to cooperate → space can contribute to the development of science, the economy, and internations relations.

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1- Golden Age in the 60s (Doc3) but investments have decreased
Still , space is a multibillion-dollar industry (1&2).
Main change is that private startups are taking over from government-funded programs (3)

Reasons to go to space now : not only exploration → find resources that are depleted on Earth (1) + Tourism : what used to be fiction is now becoming a reality / maybe accessible to anybody in the future → see cartoon (3)

Paradox : trying to save humanity or the Earth and at the same time turning space exploration into a mere consumer good.

2- New questions / Issues have been raised

Sustainability (1&2)

Startups trying to cut costs (not for environmental reasons) (1&2)

As for nations

- Space governance
- Possible new arms race + increasing amount of debris (4)

- Tragedy of commons / selfishness → risk of using up a resource.

- Sustainability and cooperation are the key to turn space exploration into something beneficial (scientifically and economically) and sustainable

3- Conclusion : only then can being an astronaut become meaningful again (Doc3)

~~To what extent do countries invest in space?~~

~~Is space exploration good or not?~~

What is the future of the space industry?

How is the space industry evolving?

Is the space industry sustainable? 😐

→ Can the space industry be made sustainable? 🤩

Does the future of humanity lie in space ? 😐

→ Under what conditions CAN the future of humanity lie in space? 🤩

To what extent can the rapid growth of the space industry and the need for sustainability be reconciled? 

- **Phrase conclusive (courte conclusion)**

  Conclusion **de tout le dossier**

  → IF / IF AND ONLY IF / PROVIDED 👍

  → WE MUST / WE HAVE TO / GOVERNMENTS MUST / HAVE TO 😭

Doing all this would help to develop science and the economy but also to have better international relations.

If states want to support humanity, the space industry must be meaningful to the majority.

Without more regulation, space exploration may fail once again.

Going into space is still worthwhile if profitability and sustainability are combined to make space a genuine development tool.

TITLE

~~The space industry / The space conquest~~ 

The expansion of the space industry

The future of the space industry

The challenges of the space industry

Is space exploration AT a dead-end ? 

What future for space exploration?

Long after the first moon landing, space exploration is still going strong, although a lot has changed over the past decades. This dossier – two 2019 articles from the Conversation *(Documents 1 and 4)*, a graph (Document 2), and a cartoon (Document 3)– shows that the amazing progress of the space industry could also be its downfall[1] if certain issues are not addressed.

The graph shows that since the so-called Golden Age of Nasa in 1966, Nasa's share of federal spending has significantly decreased, but space remains an industry worth billions of dollars, as both articles stress. The main change is that, today, space exploration is mainly in the hands of private start-up companies like Space X or Blue Origin. The reasons to explore space have changed too. It is not only about exploration, but also about finding resources that are lacking[2] on Earth, according to Document 1. And the latest trend, brought up in the cartoon, is space tourism: one day, everybody may be able to experience a trip to space. Therefore, space exploration today is seen both as a way to save humanity and as a mere consumer good[3].

Consequently, new questions are being raised as to the future of space exploration. Documents 1 and 2 insist that although it should be a sustainable endeavor, startups are actually trying to innovate for economic reasons, not environmental ones. As for[4] nations who want to become leading space powers, they seem unable to effectively collaborate. It is complicated to regulate space, and the risk of going back to the arms race of the past is still looming[5], while the overexploitation of space would inevitably pose an environmental threat. In short, countries have been acting with their own interest in mind, exporting to outer space the flawed[6] models used on earth. But sustainability and cooperation are the keys to make space exploration viable in the long run[7].

If these challenges are met [8], maybe being an astronaut can become meaningful again. (320w)

---

[1] **Downfall** = chute / perte

[2] **To lack** = [læk]

[3] **A mere consumer good** = un simple bien de consommation

[4] **As for…** = Quant à …

[5] **To loom** = menacer / s'approcher dangereusement

[6] **Flawed** = défectueux / imparfait

[7] **In the long run** = **In the long term** = à long terme

[8] **To take up a challenge / to meet a challenge** = relever / répondre à un défi

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INTRODUCTION COMPLETE

- MODELE A SUVRE POUR LE **DS DU 15 MARS** (CCINP / 3h / 400 mots)
- Voir les consignes sur la fiche méthodologique
- Introduire chaque document, sa source, sa date, et ajouter quelque mots sur **l'esprit de chaque document** :

Long after the first moon landing, which Dave Granlund refers to in a cartoon (Doc3), space exploration is still going strong, although a lot has changed in recent decades. Such is the issue addressed in this dossier. Two 2019 articles from *the Conversation (Documents 1 and 4) respectively tackle the questions of the sustainability of space exploration and of the cooperation between nations in space*, while a graph from *The Guardian* (Document 3) describes the evolution of public and private investment in space research. Could the amazing progress of the space industry also be its downfall[17] if certain issues are not addressed?

96 mots

[17] **Downfall** = chute / perte

Fill in the blanks

To spend money _____sth

To invest _____ sth

A need _____ sth

Fix the following mistakes

*The article was published on january 2019

* He critics space industry.

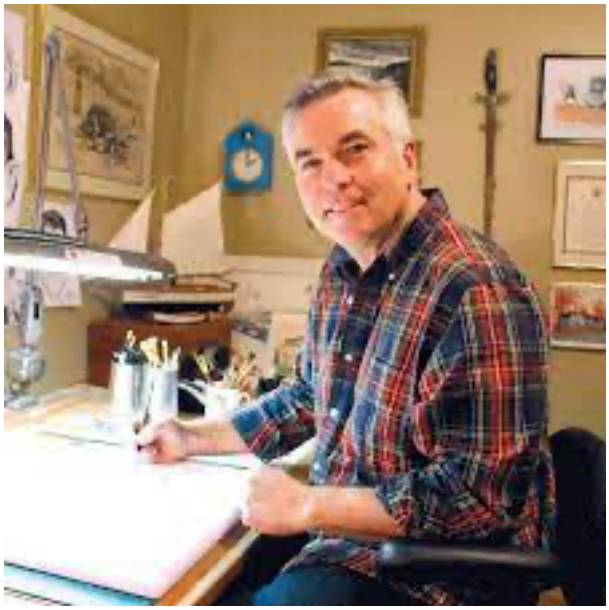
*It change since few years

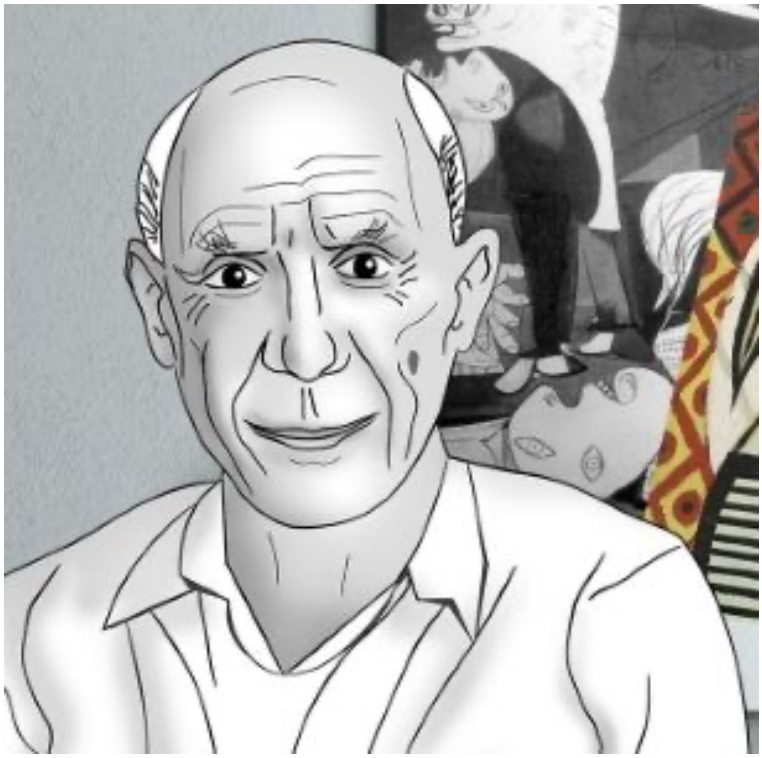
* As shows the cartoon,...

*Like it is shown in the article

According to Richard Matthews in his article, private companies....

The third document is a picture of Dave Granlund





A painting OF Picasso

A Painting BY Picasso

C’est un article de Richard Matthews.

Comme le montre le Document 3, n’importe qui peut aller dans l’espace.

Les deux articles sont tirés de The Conversation

When can I use the phrase ~~“We will study …” or “We are going to …”~~ in an introduction?

	OK ✓	NOT OK ✗
Oral test / Khôlle		
Q1 / Mines		
Q2 / Mines (Essay)		
Synthèse		
Opinion Piece (X-ENS)		

When can I use ~~“We have to …” or “People must …”~~ in a conclusion?

	OK ✓	NOT OK ✗
Oral test / Khôlle		
Q1 / Mines		
Q2 / Mines (Essay)		
Synthèse		
Opinion Piece (X-ENS)		