

## Captains' Fight 4

FPT 2018  
9-10th February



1 Question

2 Solution

You have 2 minutes to solve the following question:

What is the size in octet necessary to store a satellite view of the Earth in standard *RGB true colors* and with a centimeter-precision ? (without locating the pixels on the Earth surface)

1 Question

2 Solution

One more slide for the solution !

- A *true color* is described with 3 octets.  
( $2^8 = 256$  levels of red, green, and blue)
- Radius of the Earth:  $\simeq 6400 \text{ km}$ .

$$N_{\text{octets}} \simeq \underbrace{\frac{4\pi \cdot (6400 \cdot 10^3)^2}{(10^{-2})^2}}_{\text{number of pixels}} \times \underbrace{3}_{\text{octets per pixel}}$$

$$\Rightarrow N_{\text{octets}} \simeq 10^{19} \text{ octets } (\simeq 10^6 \text{ To})$$