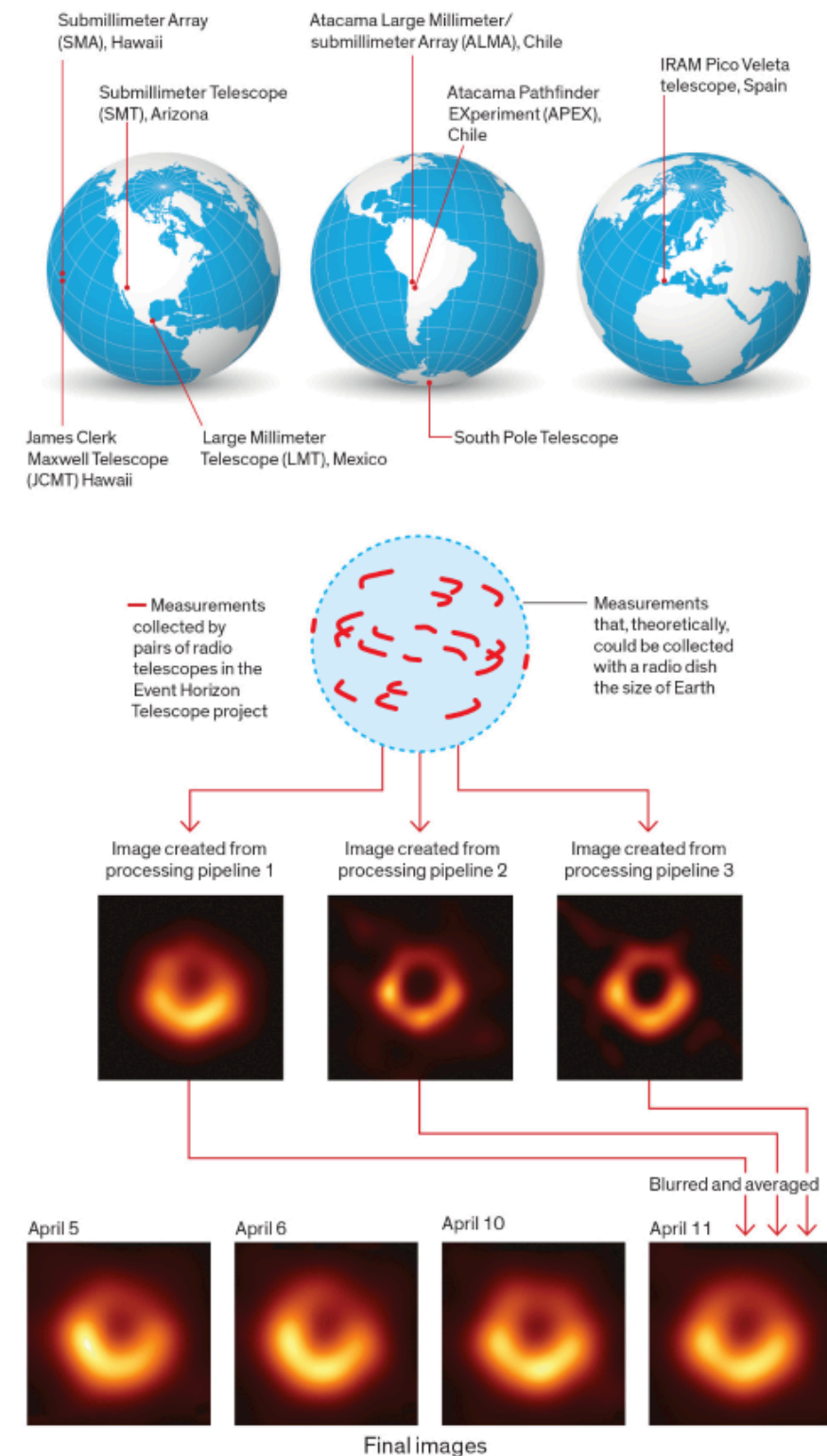


# Portrait of a Black Hole

<https://spectrum.ieee.org/aerospace/astrophysics/the-inside-story-of-the-first-picture-of-a-black-hole>

- Seven satellite dishes from around the world (6 to 50-meters in size)
- Petabytes of data:  $2^{50}$  bytes; 1024 terabytes, or a million gigabytes
- Open source algorithms - published in the event others want to assist
- Process:
  - collect the data
  - line up the signals
  - extract 2D spatial-frequency pattern
  - inverse Fourier transform to convert 2D frequency pattern into a 2D picture



The Fourier transform decomposes a function into its constituent frequencies. A special case is the expression of a musical chord in terms of the volumes and frequencies of its constituent notes. <https://www.khanacademy.org/science/electrical-engineering/ee-signals/ee-fourier-series/v/ee-fourier-series-intro>