Antimatter Powered Rockets

If interplanetary travel is to become common place in the next 100 years, then efficient forms of propulsion must be found. Up to the present time rocket propulsion has mainly been derived from chemical reactions. However, other forms of propellants based on electromagnetism, nuclear fission, nuclear fusion or antimatter may allow spaceships to reach other planets or even more distant stars.

The science minister has asked you to review the current status of antimatter propulsion as a source of propellant for a future space mission to Mars within the next 20 years. The journey time should not exceed six months. Specifically, the minister is asking the following questions:

- How does an antimatter engine work? How is the antimatter produced and stored?
- What type of research would need to be undertaken in the next 10 years to achieve a potential practical solution by 2020?
- What is your opinion concerning the practical and economic aspects of this method compared to other methods?

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