CLAIMS

What is claimed is:

1. A spacecraft servicing device, comprising:

a body configured to be deployed from a carrier spacecraft at an initial orbit other than a geosynchronous orbit;

at least one spacecraft servicing component configured to perform at least one servicing operation on a target spacecraft while being coupled to the target spacecraft;

a thruster assembly configured to alter at least one of an orbit, a velocity, or a momentum of the spacecraft servicing device; and

a docking mechanism for coupling the body to the target spacecraft, wherein the thruster assembly is configured to transport the body from the initial orbit to the geosynchronous orbit after the body is deployed from the carrier spacecraft,

wherein the spacecraft servicing device requires another spacecraft separate from the carrier spacecraft to be docked to the target spacecraft.

2. The spacecraft servicing device of claim 1, wherein the thrust assembly is positioned on a boom arm coupled to the body.

3. The spacecraft servicing device of claim 1, wherein the another spacecraft is configured to rendezvous with the spacecraft servicing device, to deliver the spacecraft servicing device to the target spacecraft, and to couple the spacecraft servicing device to the target spacecraft.

4. The spacecraft servicing device of claim 1, wherein the thruster assembly is further configured to alter at least one of an orbit, a velocity, or a momentum of the target spacecraft when the body is coupled to the target spacecraft.

5. The spacecraft servicing device of claim 1, further comprising a payload carried by the spacecraft servicing device and configured to be delivered to the target spacecraft with the spacecraft servicing device.

6. The spacecraft servicing device of claim 1, wherein the thruster assembly is configured to modify the orbit of the spacecraft servicing device to position the spacecraft servicing device proximate the target spacecraft.

7. A spacecraft servicing device, comprising:

a body configured to be deployed from a carrier spacecraft at an initial orbit other than a final destination orbit of the spacecraft servicing device;

at least one spacecraft servicing component configured to perform at least one servicing operation on a target spacecraft while being coupled to the target spacecraft; and

a docking mechanism for coupling the body to the target spacecraft, wherein the body is configured to be transported from the initial orbit to the final destination orbit after the body is deployed from the carrier spacecraft, and wherein the docking mechanism is configured to couple to the target spacecraft with the assistance of another coupling spacecraft configured to hold and position the body relative to the target spacecraft, and wherein the spacecraft servicing device lacks the ability to independently rendezvous and dock with the target spacecraft and requires the another coupling spacecraft to be docked to the target spacecraft.

8. The spacecraft servicing device of claim 7, further comprising a thruster assembly configured to transport the body from the initial orbit to the final destination orbit after the body is deployed from the carrier spacecraft.

9. The spacecraft servicing device of claim 7, wherein the spacecraft servicing pod lacks one or more prepositioning features.

10. The spacecraft servicing device of claim 7, wherein the spacecraft servicing device is configured to be positioned at a location adjacent the target spacecraft using only mechanisms of another separate spacecraft.

11. A method of servicing a spacecraft, the method comprising:

deploying a pod at an initial orbit that is lower than a geosynchronous orbit;

transporting the pod from the initial orbit substantially to the geosynchronous orbit;

coupling the pod to the spacecraft at the geosynchronous orbit with an additional spacecraft; and

after being coupled to the spacecraft, performing at least one spacecraft servicing operation.

12. The method of claim 11, further comprising assisting the coupling of the pod to the spacecraft with the additional spacecraft that is separate from both the pod and the spacecraft.

13. The method of claim 11, further comprising, after transporting the pod from the initial orbit substantially to the geosynchronous orbit:

approaching the spacecraft with the additional spacecraft holding the pod that is separate from both the pod and the spacecraft before the coupling;

rendezvousing the additional spacecraft holding the pod with the spacecraft; and

coupling the pod to the spacecraft with the additional carrier spacecraft.

14. The method of claim 11, wherein transporting the pod from the initial orbit to the geosynchronous orbit comprises driving the pod with a thruster assembly of the pod from the initial orbit to the geosynchronous orbit.

15. The method of claim 11, wherein transporting the pod from the initial orbit to the geosynchronous orbit comprises carrying the pod from the initial orbit to the geosynchronous orbit with the another spacecraft after the pod has been deployed in the initial orbit by a separate launch spacecraft.

16. The method of claim 11, wherein performing at least one spacecraft servicing operation comprising adjusting at least one of an orbit, a velocity, or a momentum of the spacecraft with a thruster assembly of the pod.

17. The method of claim 11, wherein performing at least one spacecraft servicing operation comprising delivering at least one spacecraft component to the spacecraft with the pod.

18. A spacecraft servicing device, comprising:

a thruster assembly, the thruster assembly comprising at least one thruster, wherein the thruster assembly is configured to alter an orbit of the spacecraft servicing device from a first orbit to a second orbit while the spacecraft servicing device is not coupled to another spacecraft;

a body configured to be coupled to a target spacecraft by a carrier spacecraft at a location adjacent the target spacecraft;

at least one spacecraft servicing component configured to perform at least one servicing operation on the target spacecraft while the body is coupled to the target spacecraft, wherein the at least one spacecraft servicing component comprises the thruster assembly, and the thruster assembly is further configured to alter at least one of an orbit, a velocity, or a momentum of the target spacecraft while the body is coupled to the target spacecraft; and

a communication device configured to receive data relating to the at least one of an orbit, a velocity, or a momentum of the target spacecraft from a transmission location remote from the spacecraft servicing device and, based on the received data relating to the at least one of an orbit, a velocity, or a momentum of the target spacecraft received by the communication pod, the spacecraft servicing device is configured to control the thruster assembly to alter the at least one of an orbit, a velocity, or a momentum of the target spacecraft while the spacecraft servicing device is coupled to the target spacecraft.

19. The spacecraft servicing device of claim 18, wherein the communication device is configured to receive the data from the transmission location remote from the spacecraft servicing device, and further comprising a computer programmed to operate the thruster assembly responsive to the received data.

20. The spacecraft servicing device of claim 18, wherein the communication device is configured to receive the data via at least one of a wired or wireless communication channel.