CLAIMS

1. A delivery assembly, comprising:

a prosthetic valve comprising a plurality of intersecting struts, and

a delivery apparatus comprising:

a handle;

a delivery shaft extending distally from the handle; and

a flex sensing assembly, comprising:

at least one flex sensor coupled to at least one of the plurality of struts; and

a control unit in communication with the at least one flex sensor,

wherein the prosthetic valve is movable between a radially compressed configuration and a radially expanded configuration, and

wherein, responsive to an output of the at least one flex sensor, the control unit is configured to generate a signal indicative of a diameter of the prosthetic valve.

2. The delivery assembly of claim 1, wherein the at least one flex sensor comprises a non-bending portion and a bending portion configured to flex relative to the non-bending portion.

3. The delivery assembly of any one of claims 1 to 2, wherein the prosthetic valve further comprises at least one actuator assembly,

wherein the delivery apparatus further comprises an actuation member releasably coupled to the at least one actuator assembly, and

wherein the prosthetic valve is expandable from the radially compressed state to the radially expanded state upon actuating the at least one actuator assembly by the at least one actuation member.

4. The delivery assembly of claim 2, wherein the prosthetic valve further comprises at least one actuator assembly,

wherein the delivery apparatus further comprises an actuation member releasably coupled to the at least one actuator assembly,

wherein the prosthetic valve is expandable from the radially compressed state to the radially expanded state upon actuating the at least one actuator assembly by the at least one actuation member, and

wherein the non-bending portion of the at least one flex sensor is coupled to the at least one actuator assembly.

5. The delivery assembly of any one of claims 1 to 4, further comprising at least one communication channel, a first end of the at least one communication channel coupled to the at least one flex sensor and a second end of the at least one communication channel extending towards the handle,

wherein the at least one communication channel is retractable from the prosthetic valve.

6. The delivery assembly of claim 5, wherein the flex sensing assembly further comprises a sensor shaft extending distally from the handle, and

wherein at least a portion of the at least one communication channel extends through the sensor shaft.

7. The delivery assembly of claim 5 or 6, further comprising:

at least one sensor housing attached to a strut; and

at least one detachable shaft extending distally from the handle, and detachably coupled to the sensor housing,

wherein the at least one flex sensor is locally attached to the at least one sensor housing;

wherein at least a portion of the at least one communication channel extends through the at least one detachable shaft;

wherein the communication channel is detachably coupled to the at least one flex sensor;

wherein the detachable shaft is configured isolate the at least one communication channel from ambient flow, when the detachable shaft is coupled to the sensor housing; and

wherein the at least one communication channel is axially movable relative to the at least one detachable shaft, when the at least one communication channel is detached from the at least one sensor.

8. The delivery assembly of claim 7, wherein the at least one communication channel is detachable from the at least one flex sensor upon application of a pull force on the at least one communication channel, and wherein the magnitude of the pull force is higher than a predetermined threshold magnitude.

9. The delivery assembly of claim 7 or 8, wherein the sensor housing comprises a sensor housing proximal threaded end, and wherein the detachable shaft comprises a detachable shaft distal threaded end, configured to engage with the sensor housing proximal threaded end.

10. The delivery assembly of claim 5 or 6, wherein the at least one flex sensor is an optic flex sensor configured to generate an optic signal, the at least one communication channel being at least one optic conductor, and

wherein the at least one optic conductor is detachably optically coupled to the at least one optic flex sensor.

11. The delivery assembly of any one of claims 1 to 10, wherein the at least one flex sensor is coupled to the strut via at least one coupling member.

12. The delivery assembly of claim 11, wherein the at least one coupling member comprises at least one of: a suture, a band, a tube, and/or a sleeve, and wherein the at least one flex sensor is slidable relative to the at least one coupling member upon application of a force exceeding the frictional force applied by the at least one coupling member on the at least one flex sensor.

13. The delivery assembly of any one of claims 1 to 10, wherein the strut to which the at least one flex sensor is coupled, comprises at least two strut apertures through which the at least one flex sensor extends.

14. The delivery assembly of any one of claims 1 to 13~~Error! Reference source not found.~~, wherein the at least one flex sensor comprises a variable resistance element, configured to vary its electrical resistivity in response to the extent of bending applied thereto.

15. The delivery assembly of claim 14, wherein the variable resistance element comprises a strain gauge.

16. The delivery assembly of claim 14, wherein the variable resistance element comprises a conductive material layer.

17. The delivery assembly of any one of claims 1 to 13, wherein the at least one flex sensor is an optic flex sensor configured to generate an optic signal.

18. The delivery assembly of claim 17, wherein the at least one optic flex sensor comprises a plurality of axially spaced Fiber Bragg Gratings.

19. The delivery assembly of claim 17 or 18, further comprising at least one optic conductor detachably optically coupled to the at least one optic flex sensor.

20. The delivery assembly of any one of claims 1 to 19, wherein the flex sensing assembly further comprises at least one flexible distal extension, attached to and extending distally from the at least one flex sensor.

21. The delivery assembly of claim 20, wherein the at least one flexible distal extension is resiliently curved sideways.

22. The delivery assembly of claim 20 or 21, wherein the at least one flexible distal extension comprises:

a first flexible distal extension comprising a first distal loop, wherein the first flexible distal extension is attached to and extends distally from the first flex sensor; and

a second flexible distal extension comprising a second distal loop, wherein the second flexible distal extension is attached to and extends distally from the second flex sensor,

wherein the flex sensing assembly further comprises a flexible elongate member extending distally from the handle and through the first distal loop and the second distal loop, and

wherein the flexible elongate member is configured to couple the first flexible distal extension with the second flexible distal extension when extending through the first distal loop and the second distal loop, and to allow separation thereof upon being pulled therefrom.

23. The delivery assembly of any one of claims 1 to 22, wherein at least one of the at least one flex sensors is coupled to at least two intersecting struts.

24. The delivery assembly of any one of claims 1 to 22, wherein the at least one flex sensor comprises a first flex sensor coupled to a first strut, and a second flex sensor coupled to the second strut, wherein the at least one communication channel comprises a first communication channel coupled to the first flex sensor, and a second communication channel coupled to the

second flex sensor, and wherein the first strut and the second strut are intersecting with each other.

25. The delivery assembly of any one of claims 1 to 2 or 5 to 24, further comprising:

an inflatable balloon, the inflatable balloon positioned within the prosthetic valve;

a reservoir containing a predetermined volume of inflation fluid;

a pump in fluid communication with the reservoir; and

a fluid flow channel, a distal end of the fluid flow channel in fluid communication with an opening of the inflatable balloon and a proximal end of the fluid flow channel in fluid communication with the pump,

wherein, movement of the prosthetic valve between the radially compressed configured to the radially expanded configuration is responsive to an inflation of the inflatable balloon, and

wherein the pump is configured to generate flow of the inflation fluid into the inflatable balloon via the fluid flow channel.

26. The delivery assembly of claim 25, further comprising a pressure sensor configured to measure pressure of the inflation fluid,

wherein, responsive to the measured pressure of the inflation fluid, the pump is further configured to adjust the generated flow of the inflation fluid.

27. The delivery assembly of claim 26, wherein the pressure sensor is positioned within the inflation fluid.

~~28. A delivery assembly, comprising:~~

~~a prosthetic valve comprising a plurality of intersecting struts, and~~

~~a delivery apparatus comprising:~~

~~a handle;~~

~~a delivery shaft extending distally from the handle; and~~

~~a flex sensing assembly, comprising at least one flex sensor coupled to at least one of the plurality of struts,~~

~~wherein the prosthetic valve is movable between a radially compressed configuration and a radially expanded configuration, and~~

~~wherein the at least one flex sensor comprises a non-bending portion and a bending portion configured to flex relative to the non-bending portion.~~

~~29. The delivery assembly of claim 28, wherein, responsive to an output of the at least one flex sensor, the control unit is configured to generate a signal indicative of a diameter of the prosthetic valve.~~

~~30. The delivery assembly of any one of claims 28 to 29, wherein the prosthetic valve further comprises at least one actuator assembly,~~

~~wherein the delivery apparatus further comprises an actuation member releasably coupled to the at least one actuator assembly, and~~

~~wherein the prosthetic valve is expandable from the radially compressed state to the radially expanded state upon actuating the at least one actuator assembly by the at least one actuation member.~~

~~31. The delivery assembly of claim 30, wherein the non-bending portion of the at least one flex sensor is coupled to the at least one actuator assembly.~~

~~32. The delivery assembly of any one of claims 28 to 31, further comprising at least one communication channel, a first end of the at least one communication channel coupled to the at least one flex sensor and a second end of the at least one communication channel extending towards the handle,~~

~~wherein the at least one communication channel is retractable from the prosthetic valve.~~

~~33. The delivery assembly of claim 32, wherein the flex sensing assembly further comprises a sensor shaft extending distally from the handle, and~~

~~wherein at least a portion of the at least one communication channel extends through the sensor shaft.~~

~~34. The delivery assembly of claim 32 or 33, further comprising:~~

~~at least one sensor housing attached to a strut; and~~

~~at least one detachable shaft extending distally from the handle, and detachably coupled to the sensor housing,~~

~~wherein the at least one flex sensor is locally attached to the at least one sensor housing;~~

~~wherein at least a portion of the at least one communication channel extends through the at least one detachable shaft;~~

~~wherein the communication channel is detachably coupled to the at least one flex sensor;~~

~~wherein the detachable shaft is configured isolate the at least one communication channel from ambient flow, when the detachable shaft is coupled to the sensor housing; and~~

~~wherein the at least one communication channel is axially movable relative to the at least one detachable shaft, when the at least one communication channel is detached from the at least one sensor.~~

~~35. The delivery assembly of claim 34, wherein the at least one communication channel is detachable from the at least one flex sensor upon application of a pull force on the at least one communication channel, and wherein the magnitude of the pull force is higher than a predetermined threshold magnitude.~~

~~36. The delivery assembly of claim 34 or 35, wherein the sensor housing comprises a sensor housing proximal threaded end, and wherein the detachable shaft comprises a detachable shaft distal threaded end, configured to engage with the sensor housing proximal threaded end.~~

~~37. The delivery assembly of claim 32 or 33, wherein the at least one flex sensor is an optic flex sensor configured to generate an optic signal, the at least one communication channel being at least one optic conductor, and~~

~~wherein the at least one optic conductor is detachably optically coupled to the at least one optic flex sensor.~~

~~38. The delivery assembly of any one of claims 28 to 37, wherein the at least one flex sensor is coupled to the strut via at least one coupling member.~~

~~39. The delivery assembly of claim 28, wherein the at least one coupling member comprises at least one of: a suture, a band, a tube, and/or a sleeve, and wherein the at least one flex sensor is slidable relative to the at least one coupling member upon application of a force exceeding the frictional force applied by the at least one coupling member on the at least one flex sensor.~~

~~40. The delivery assembly of any one of claims 28 to 37, wherein the strut to which the at least one flex sensor is coupled, comprises at least two strut apertures through which the at least one flex sensor extends.~~

~~41. The delivery assembly of any one of claims 28 to 40, wherein the at least one flex sensor comprises a variable resistance element, configured to vary its electrical resistivity in response to the extent of bending applied thereto.~~

~~42. The delivery assembly of claim 41, wherein the variable resistance element comprises a strain gauge.~~

~~43. The delivery assembly of claim 41, wherein the variable resistance element comprises a conductive material layer.~~

~~44. The delivery assembly of any one of claims 28 to 40, wherein the at least one flex sensor is an optic flex sensor configured to generate an optic signal.~~

~~45. The delivery assembly of claim 44, wherein the at least one optic flex sensor comprises a plurality of axially spaced Fiber Bragg Gratings.~~

~~46. The delivery assembly of claim 44 or 45, further comprising at least one optic conductor is detachably optically coupled to the at least one optic flex sensor.~~

~~47. The delivery assembly of any one of claims 28 to 46, wherein the flex sensing assembly further comprises at least one flexible distal extension, attached to and extending distally from the at least one flex sensor.~~

~~48. The delivery assembly of claim 47, wherein the at least one flexible distal extension is resiliently curved sideways.~~

~~49. The delivery assembly of claim 47 or 48, wherein the at least one flexible distal extension comprises:~~

~~a first flexible distal extension comprising a first distal loop, wherein the first flexible distal extension is attached to and extends distally from the first flex sensor; and~~

~~a second flexible distal extension comprising a second distal loop, wherein the second flexible distal extension is attached to and extends distally from the second flex sensor,~~

~~wherein the flex sensing assembly further comprises a flexible elongate member extending distally from the handle and through the first distal loop and the second distal loop, and~~

~~wherein the flexible elongate member is configured to couple the first flexible distal extension with the second flexible distal extension when extending through the first distal loop and the second distal loop, and to allow separation thereof upon being pulled therefrom.~~

~~50. The delivery assembly of any one of claims 28 to 49, wherein at least one of the at least one flex sensors is coupled to at least two intersecting struts.~~

~~51. The delivery assembly of any one of claims 28 to 49, wherein the at least one flex sensor comprises a first flex sensor coupled to a first strut, and a second flex sensor coupled to the second strut, wherein the at least one communication channel comprises a first communication channel coupled to the first flex sensor, and a second communication channel coupled to the second flex sensor, and wherein the first strut and the second strut are intersecting with each other.~~

~~52. The delivery assembly of any one of claims 28 to 29 or 32 to 51, further comprising:~~

~~an inflatable balloon, the inflatable balloon positioned within the prosthetic valve;~~

~~a reservoir containing a predetermined volume of inflation fluid;~~

~~a pump in fluid communication with the reservoir; and~~

~~a fluid flow channel, a distal end of the fluid flow channel in fluid communication with an opening of the inflatable balloon and a proximal end of the fluid flow channel in fluid communication with the pump,~~

~~wherein, movement of the prosthetic valve between the radially compressed configured to the radially expanded configuration is responsive to an inflation of the inflatable balloon, and~~

~~wherein the pump is configured to generate flow of the inflation fluid into the inflatable balloon via the fluid flow channel.~~

~~53. The delivery assembly of claim 52, further comprising a pressure sensor configured to measure pressure of the inflation fluid,~~

~~wherein, responsive to the measured pressure of the inflation fluid, the pump is further configured to adjust the generated flow of the inflation fluid.~~

~~54. The delivery assembly of claim 53, wherein the pressure sensor is positioned within the inflation fluid.~~

~~55. A delivery assembly, comprising:~~

~~a prosthetic valve comprising a plurality of intersecting struts, and~~

~~a delivery apparatus comprising:~~

~~a handle;~~

~~a delivery shaft extending distally from the handle; and~~

~~a flex sensing assembly, comprising:~~

~~at least one flex sensor coupled to at least one of the plurality of struts; and~~

~~at least one communication channel, a first end of the at least one communication channel coupled to the at least one flex sensor and a second end of the at least one communication channel extending towards the handle,~~

~~wherein the prosthetic valve is movable between a radially compressed configuration and a radially expanded configuration, and~~

~~wherein the at least one communication channel is retractable from the prosthetic valve.~~

~~56. The delivery assembly of claim 55, wherein the at least one flex sensor comprises a non-bending portion and a bending portion configured to flex relative to the non-bending portion.~~

~~57. The delivery assembly of claim 55 or 56, wherein the prosthetic valve further comprises at least one actuator assembly,~~

~~wherein the delivery apparatus further comprises an actuation member releasably coupled to the at least one actuator assembly, and~~

~~wherein the prosthetic valve is expandable from the radially compressed state to the radially expanded state upon actuating the at least one actuator assembly by the at least one actuation member.~~

~~58. The delivery assembly of claim 56, wherein the prosthetic valve further comprises at least one actuator assembly,~~

~~wherein the delivery apparatus further comprises an actuation member releasably coupled to the at least one actuator assembly,~~

~~wherein the prosthetic valve is expandable from the radially compressed state to the radially expanded state upon actuating the at least one actuator assembly by the at least one actuation member, and~~

~~wherein the non-bending portion of the at least one flex sensor is coupled to the at least one actuator assembly.~~

~~59. The delivery assembly of any of claims 55 to 58, wherein the flex sensing assembly further comprises a sensor shaft extending distally from the handle, and~~

~~wherein at least a portion of the at least one communication channel extends through the sensor shaft.~~

~~60. The delivery assembly of any one of claims 55 to 59, further comprising:~~

~~at least one sensor housing attached to a strut; and~~

~~at least one detachable shaft extending distally from the handle, and detachably coupled to the sensor housing,~~

~~wherein the at least one flex sensor is locally attached to the at least one sensor housing;~~

~~wherein at least a portion of the at least one communication channel extends through the at least one detachable shaft;~~

~~wherein the communication channel is detachably coupled to the at least one flex sensor;~~

~~wherein the detachable shaft is configured isolate the at least one communication channel from ambient flow, when the detachable shaft is coupled to the sensor housing; and~~

~~wherein the at least one communication channel is axially movable relative to the at least one detachable shaft, when the at least one communication channel is detached from the at least one sensor.~~

~~61. The delivery assembly of any one of claims 55 to 60, wherein the at least one communication channel is detachable from the at least one flex sensor upon application of a pull force on the at least one communication channel, and wherein the magnitude of the pull force is higher than a predetermined threshold magnitude.~~

~~62. The delivery assembly of claim 60 or 61, wherein the sensor housing comprises a sensor housing proximal threaded end, and wherein the detachable shaft comprises a detachable shaft distal threaded end, configured to engage with the sensor housing proximal threaded end.~~

~~63. The delivery assembly of any one of claims 55 to 62, wherein the at least one flex sensor is coupled to the strut via at least one coupling member.~~

~~64. The delivery assembly of claim 63, wherein the at least one coupling member comprises at least one of: a suture, a band, a tube, and/or a sleeve, and wherein the at least one flex sensor is slidable relative to the at least one coupling member upon application of a force exceeding the frictional force applied by the at least one coupling member on the at least one flex sensor.~~

~~65. The delivery assembly of any one of claims 55 to 62, wherein the strut to which the at least one flex sensor is coupled, comprises at least two strut apertures through which the at least one flex sensor extends.~~

~~66. The delivery assembly of any one of claims 55 to 65, wherein the at least one flex sensor comprises a variable resistance element, configured to vary its electrical resistivity in response to the extent of bending applied thereto.~~

~~67. The delivery assembly of claim 66, wherein the variable resistance element comprises a strain gauge.~~

~~68. The delivery assembly of claim 66, wherein the variable resistance element comprises a conductive material layer.~~

~~69. The delivery assembly of any one of claims 55 to 65, wherein the at least one flex sensor is an optic flex sensor configured to generate an optic signal, and wherein the at least one transmission line is an optic conductor.~~

~~70. The delivery assembly of claim 69, wherein the at least one optic flex sensor comprises a plurality of axially spaced Fiber Bragg Gratings.~~

~~71. The delivery assembly of claim 69 or 70, wherein the at least one optic conductor is detachably optically coupled to the at least one optic flex sensor.~~

~~72. The delivery assembly of any one of claims 55 to 71, wherein the flex sensing assembly further comprises at least one flexible distal extension, attached to and extending distally from the at least one flex sensor.~~

~~73. The delivery assembly of claim 72, wherein the at least one flexible distal extension is resiliently curved sideways.~~

~~74. The delivery assembly of claim 72 or 73, wherein the at least one flexible distal extension comprises:~~

~~a first flexible distal extension comprising a first distal loop, wherein the first flexible distal extension is attached to and extends distally from the first flex sensor; and~~

~~a second flexible distal extension comprising a second distal loop, wherein the second flexible distal extension is attached to and extends distally from the second flex sensor,~~

~~wherein the flex sensing assembly further comprises a flexible elongate member extending distally from the handle and through the first distal loop and the second distal loop, and~~

~~wherein the flexible elongate member is configured to couple the first flexible distal extension with the second flexible distal extension when extending through the first distal loop and the second distal loop, and to allow separation thereof upon being pulled therefrom.~~

~~75. The delivery assembly of any one of claims 55 to 74, wherein at least one of the at least one flex sensors is coupled to at least two intersecting struts.~~

~~76. The delivery assembly of any one of claims 55 to 74, wherein the at least one flex sensor comprises a first flex sensor coupled to a first strut, and a second flex sensor coupled to the second strut, wherein the at least one communication channel comprises a first communication channel coupled to the first flex sensor, and a second communication channel coupled to the second flex sensor, and wherein the first strut and the second strut are intersecting with each other.~~

~~77. The delivery assembly of any one of claims 55 to 56 or 59 to 76, further comprising:~~

an inflatable balloon, the inflatable balloon positioned within the prosthetic valve;

a reservoir containing a predetermined volume of inflation fluid;

a pump in fluid communication with the reservoir; and

a fluid flow channel, a distal end of the fluid flow channel in fluid communication with an opening of the inflatable balloon and a proximal end of the fluid flow channel in fluid communication with the pump,

wherein, movement of the prosthetic valve between the radially compressed configured to the radially expanded configuration is responsive to an inflation of the inflatable balloon, and

wherein the pump is configured to generate flow of the inflation fluid into the inflatable balloon via the fluid flow channel.

78. The delivery assembly of claim 77, further comprising a pressure sensor configured to measure pressure of the inflation fluid,

wherein, responsive to the measured pressure of the inflation fluid, the pump is further configured to adjust the generated flow of the inflation fluid.

79. The delivery assembly of claim 78, wherein the pressure sensor is positioned within the inflation fluid.

80. A delivery assembly, comprising:

a prosthetic valve movable between a radially compressed configuration and a radially expanded configuration, and

a delivery apparatus comprising:

a handle;

a delivery shaft extending distally from the handle;

an inflatable balloon, the inflatable balloon positioned within the prosthetic valve;

a reservoir containing a predetermined volume of inflation fluid;

a pump in fluid communication with the reservoir;

a fluid flow channel, a distal end of the fluid flow channel in fluid communication with an opening of the inflatable balloon and a proximal end of the fluid flow channel in fluid communication with the pump;

a diameter sensor, an output of the diameter sensor responsive to a radial diameter of the prosthetic valve and/or the inflatable balloon; and

a control unit in communication with the pump and the diameter sensor,

wherein, responsive to an inflation of the inflatable balloon, the prosthetic valve is movable between a radially compressed configuration and a radially expanded configuration,

wherein the pump is configured to generate flow of the inflation fluid into the inflatable balloon via the fluid flow channel, and

wherein, responsive to the output of the diameter sensor, the control circuitry is configured to control the pump to adjust the flow of the inflation fluid.

81. The delivery assembly of claim 80, wherein the control unit is further configured, responsive to the output of the diameter sensor, to determine an indication of a radial diameter of the prosthetic valve and/or the inflatable balloon, the adjustment of the flow of the inflation fluid further responsive to the determined diameter indication.

82. The delivery assembly of claim 81 wherein the determined diameter indication comprises a change in radial diameter.

83. The delivery assembly of any one of claims 80 to 82, wherein the diameter sensor comprises:

at least one radially translatable member juxtaposed with an outer surface of the inflatable balloon such that the inflation of the balloon radially translates the at least one radially translatable member; and

a linear displacement sensor coupled to the at least one radially translatable member and in communication with the control unit, an output of the linear displacement sensor configured to be responsive to the radial translation of the at least one radially translatable member.

84. The delivery assembly of claim 83, wherein the at least one radially translatable member surrounds the outer surface of the inflatable balloon.

85. The delivery assembly of claim 84, wherein the at least one radially translatable member is loop shaped.

~~86. The delivery assembly of claim 83, wherein the at least one radially translatable member comprises:~~

~~a first balloon portion;~~

~~a second balloon portion; and~~

~~a connection portion, each of the first balloon portion and the second balloon portion extending from a first end of the connection portion, and a second end of the connection portion coupled to the linear displacement sensor.~~

~~87. The delivery assembly of claim 86, wherein each of the first balloon portion and the second balloon portion extends in a respective direction, the direction of extension of the second balloon portion generally opposing the direction of extension of the first balloon portion.~~

~~88. The delivery assembly of any one of claims 80 to 82, wherein the diameter sensor comprises at least one flex sensor,~~

~~wherein the prosthetic valve comprises a plurality of intersecting struts, the at least one flex sensor coupled to at least one of the plurality of struts.~~

~~89. The delivery assembly of claim 88, wherein the at least one flex sensor comprises a non-bending portion and a bending portion configured to flex relative to the non-bending portion.~~

~~90. The delivery assembly of claim 88 or 89, wherein the at least one flex sensor comprises a first flex sensor coupled to a first of the plurality of struts and a second flex sensor coupled to a second of a plurality of struts,~~

~~wherein the first of the plurality of struts and the second of the plurality of struts intersect each other.~~

~~91. The delivery assembly of any one of claims 88 to 90, further comprising at least one communication channel, a first end of the at least one communication channel coupled to the at least one flex sensor,~~

~~wherein the at least one communication channel is retractable from the prosthetic valve.~~

~~92. The delivery assembly of any one of claims 80 to 82, wherein the diameter sensor comprises at least one strain gauge circumferentially disposed on an outer surface of the inflatable balloon.~~

93. The delivery assembly of any one of claims 80 to 92, further comprising a pressure sensor configured to measure pressure of the inflation fluid,

wherein, responsive to the measured pressure of the inflation fluid, the pump is further configured to adjust the generated flow of the inflation fluid.

94. The delivery assembly of any one of claims 80 to 92, further comprising a pressure sensor configured to measure pressure of the inflation fluid,

wherein the adjustment of the flow of the inflation fluid is responsive to a predetermined function of the measured pressure and the determined diameter indication.

95. The delivery assembly of claim 93 or 94, wherein the pressure sensor is positioned within the inflation fluid.

96. The delivery assembly of claim 95, wherein the pressure sensor is positioned within the fluid flow channel.

97. A delivery assembly, comprising:

a prosthetic valve movable between a radially compressed configuration and a radially expanded configuration, and

a delivery apparatus comprising:

a handle;

a delivery shaft extending distally from the handle;

an inflatable balloon, the inflatable balloon positioned within the prosthetic valve;

a reservoir containing a predetermined volume of inflation fluid;

a pump in fluid communication with the reservoir;

a fluid flow channel, a distal end of the fluid flow channel in fluid communication with an opening of the inflatable balloon and a proximal end of the fluid flow channel in fluid communication with the pump;

an imager configured to image the prosthetic valve; and

a control unit in communication with the pump and the imager,

wherein, responsive to an inflation of the inflatable balloon, the prosthetic valve is movable between a radially compressed configuration and a radially expanded configuration,

~~wherein the pump is configured to generate flow of the inflation fluid into the inflatable balloon via the fluid flow channel, and~~

~~wherein, responsive to the output of the imager, the control circuitry is configured to control the pump to adjust the flow of the inflation fluid.~~

~~98. The delivery assembly of claim 97, wherein the prosthetic valve comprises at least one radiopaque marker, the configuration of the imager to image the prosthetic valve comprises a configuration to image the at least one radiopaque marker.~~

~~99. The delivery assembly of claim 98, wherein the at least one radiopaque marker comprises radiopaque coating.~~

~~100. The delivery assembly of claim 98 or 99, wherein the at least one radiopaque marker comprises a plurality of radiopaque markers exhibiting predetermined spaces therebetween.~~

~~101. The delivery assembly of any one of claims 97 to 100, further comprising a pressure sensor configured to measure pressure of the inflation fluid,~~

~~wherein, responsive to the measured pressure of the inflation fluid, the pump is further configured to adjust the generated flow of the inflation fluid.~~

~~102. The delivery assembly of any one of claims 97 to 100, further comprising a pressure sensor configured to measure pressure of the inflation fluid,~~

~~wherein the adjustment of the flow of the inflation fluid is responsive to a predetermined function of the measured pressure and the determined diameter indication.~~

~~103. The delivery assembly of claim 101 or 102, wherein the pressure sensor is positioned within the inflation fluid.~~

~~104. The delivery assembly of claim 103, wherein the pressure sensor is positioned within the fluid flow channel.~~

~~105. A delivery assembly, comprising:~~

~~a prosthetic valve movable between a radially compressed configuration and a radially expanded configuration, and~~

a delivery apparatus comprising:

a handle;

a delivery shaft extending distally from the handle;

an inflatable balloon, the inflatable balloon positioned within the prosthetic valve;

a reservoir containing a predetermined volume of inflation fluid;

a pump in fluid communication with the reservoir;

a fluid flow channel, a distal end of the fluid flow channel in fluid communication with an opening of the inflatable balloon and a proximal end of the fluid flow channel in fluid communication with the pump;

an imager configured to image the inflatable balloon; and

a control unit in communication with the pump and the imager,

wherein, responsive to an inflation of the inflatable balloon, the prosthetic valve is movable between a radially compressed configuration and a radially expanded configuration,

wherein the pump is configured to generate flow of the inflation fluid into the inflatable balloon via the fluid flow channel, and

wherein, responsive to the output of the imager, the control circuitry is configured to control the pump to adjust the flow of the inflation fluid.

106. The delivery assembly of claim 105, wherein the inflatable balloon comprises at least one radiopaque marker, the configuration of the imager to image the inflatable balloon comprises a configuration to image the at least one radiopaque marker.

107. The delivery assembly of claim 106, wherein the at least one radiopaque marker comprises radiopaque coating.

108. The delivery assembly of claim 106 or 107, wherein the at least one radiopaque marker comprises a plurality of radiopaque markers exhibiting predetermined spaces therebetween.

109. The delivery assembly of any one of claims 105 to 108, wherein the control unit is further configured, responsive to the output of the imager, to determine an indication of a radial diameter of the prosthetic valve and/or the inflatable balloon, the adjustment of the flow of the inflation fluid further responsive to the determined diameter indication.

~~110. The delivery assembly of claim 109, wherein the determined diameter indication comprises a change in radial diameter.~~

~~111. The delivery assembly of any one of claims 105 to 110, further comprising a pressure sensor configured to measure pressure of the inflation fluid,~~

~~wherein, responsive to the measured pressure of the inflation fluid, the pump is further configured to adjust the generated flow of the inflation fluid.~~

~~112. The delivery assembly of any one of claims 105 to 110, further comprising a pressure sensor configured to measure pressure of the inflation fluid,~~

~~wherein the adjustment of the flow of the inflation fluid is responsive to a predetermined function of the measured pressure and the determined diameter indication.~~

~~113. The delivery assembly of claim 111 or 112, wherein the pressure sensor is positioned within the inflation fluid.~~

~~114. The delivery assembly of claim 113, wherein the pressure sensor is positioned within the fluid flow channel.~~

~~115. A delivery assembly, comprising:~~

~~a handle;~~

~~a delivery shaft extending distally from the handle;~~

~~an inflatable balloon;~~

~~a reservoir containing a predetermined volume of inflation fluid;~~

~~a pump in fluid communication with the reservoir;~~

~~a fluid flow channel, a distal end of the fluid flow channel in fluid communication with an opening of the inflatable balloon and a proximal end of the fluid flow channel in fluid communication with the pump;~~

~~a control unit in communication with the pump;~~

~~at least one radially translatable member juxtaposed with an outer surface of the inflatable balloon such that the inflation of the balloon radially translates the at least one radially translatable member; and~~

~~a linear displacement sensor coupled to the at least one radially translatable member and in communication with the control unit, an output of the linear displacement sensor~~

~~configured to be responsive to the radial translation of the at least one radially translatable member, wherein the pump is configured to generate flow of the inflation fluid into the inflatable balloon via the fluid flow channel, and~~

~~wherein, responsive to the output of the linear displacement sensor, the control circuitry is configured to control the pump to adjust the flow of the inflation fluid.~~

~~116. The delivery assembly of claim 115, wherein the control unit is further configured, responsive to the output of the linear displacement sensor, to determine an indication of a radial diameter of the inflatable balloon, the adjustment of the flow of the inflation fluid further responsive to the determined diameter indication.~~

~~117. The delivery assembly of claim 115 wherein the determined diameter indication comprises a comprises a change in radial diameter.~~

~~118. The delivery assembly of any one of claims 115 to 117, wherein the at least one radially translatable member surrounds the outer surface of the inflatable balloon.~~

~~119. The delivery assembly of claim 118, wherein the at least one radially translatable member is loop shaped.~~

~~120. The delivery assembly of any one of claims 115 to 117, wherein the at least one radially translatable member comprises:~~

~~a first balloon portion;~~

~~a second balloon portion; and~~

~~a connection portion, each of the first balloon portion and the second balloon portion extending from a first end of the connection portion, and a second end of the connection portion coupled to the linear displacement sensor.~~

~~121. The delivery assembly of claim 120, wherein each of the first balloon portion and the second balloon portion extends in a respective direction, the direction of extension of the second balloon portion generally opposing the direction of extension of the first balloon portion.~~

~~122. The delivery assembly of any one of claims 115 to 121, further comprising a pressure sensor configured to measure pressure of the inflation fluid,~~

~~wherein, responsive to the measured pressure of the inflation fluid, the pump is further configured to adjust the generated flow of the inflation fluid.~~

~~123. The delivery assembly of any one of claims 115 to 121, further comprising a pressure sensor configured to measure pressure of the inflation fluid,~~

~~wherein the adjustment of the flow of the inflation fluid is responsive to a predetermined function of the measured pressure and the determined diameter indication.~~

~~124. The delivery assembly of claim 122 or 123, wherein the pressure sensor is positioned within the inflation fluid.~~

~~125. The delivery assembly of claim 124, wherein the pressure sensor is positioned within the fluid flow channel.~~

~~126. A delivery assembly, comprising:~~

~~a handle;~~

~~a delivery shaft extending distally from the handle;~~

~~an inflatable balloon;~~

~~a reservoir containing a predetermined volume of inflation fluid;~~

~~a pump in fluid communication with the reservoir;~~

~~a fluid flow channel, a distal end of the fluid flow channel in fluid communication with an opening of the inflatable balloon and a proximal end of the fluid flow channel in fluid communication with the pump;~~

~~a control unit in communication with the pump; and~~

~~at least one strain gauge circumferentially disposed on an outer surface of the inflatable balloon,~~

~~wherein the pump is configured to generate flow of the inflation fluid into the inflatable balloon via the fluid flow channel, and~~

~~wherein, responsive to an output of the at least one strain gauge, the control circuitry is configured to control the pump to adjust the flow of the inflation fluid.~~

~~127. The delivery assembly of claim 126, wherein the control unit is further configured, responsive to the output of the at least one strain gauge, to determine an indication of a radial diameter of the inflatable balloon, the adjustment of the flow of the inflation fluid further responsive to the determined diameter indication.~~

~~128. The delivery assembly of claim 127 wherein the determined diameter indication comprises a comprises a change in radial diameter.~~

~~129. The delivery assembly of any one of claims 126 to 128, further comprising a pressure sensor configured to measure pressure of the inflation fluid,~~

~~wherein, responsive to the measured pressure of the inflation fluid, the pump is further configured to adjust the generated flow of the inflation fluid.~~

~~130. The delivery assembly of any one of claims 126 to 128, further comprising a pressure sensor configured to measure pressure of the inflation fluid,~~

~~wherein the adjustment of the flow of the inflation fluid is responsive to a predetermined function of the measured pressure and the determined diameter indication.~~

~~131. The delivery assembly of claim 129 or 130, wherein the pressure sensor is positioned within the inflation fluid.~~

~~132. The delivery assembly of claim 131, wherein the pressure sensor is positioned within the fluid flow channel.~~

~~133. A delivery assembly, comprising:~~

~~a handle;~~

~~a delivery shaft extending distally from the handle;~~

~~an inflatable balloon, the inflatable balloon positioned within the prosthetic valve;~~

~~a reservoir containing a predetermined volume of inflation fluid;~~

~~a pump in fluid communication with the reservoir;~~

~~a fluid flow channel, a distal end of the fluid flow channel in fluid communication with an opening of the inflatable balloon and a proximal end of the fluid flow channel in fluid communication with the pump;~~

~~an imager configured to image the inflatable balloon; and~~

~~a control unit in communication with the pump and the imager,~~

~~wherein the pump is configured to generate flow of the inflation fluid into the inflatable balloon via the fluid flow channel, and~~

~~wherein, responsive to the output of the imager, the control circuitry is configured to control the pump to adjust the flow of the inflation fluid.~~

~~134. The delivery assembly of claim 133, wherein the inflatable balloon comprises at least one radiopaque marker, the configuration of the imager to image the inflatable balloon comprises a configuration to image the at least one radiopaque marker.~~

~~135. The delivery assembly of claim 134, wherein the at least one radiopaque marker comprises radiopaque coating.~~

~~136. The delivery assembly of claim 134 or 135, wherein the at least one radiopaque marker comprises a plurality of radiopaque markers exhibiting predetermined spaces therebetween.~~

~~137. The delivery assembly of any of claims 133 to 136, wherein the control unit is further configured, responsive to the output of the imager, to determine an indication of a radial diameter of the inflatable balloon, the adjustment of the flow of the inflation fluid further responsive to the determined diameter indication.~~

~~138. The delivery assembly of claim 137, wherein the determined diameter indication comprises a change in radial diameter.~~

~~139. The delivery assembly of any one of claims 133 to 138, further comprising a pressure sensor configured to measure pressure of the inflation fluid,~~

~~wherein, responsive to the measured pressure of the inflation fluid, the pump is further configured to adjust the generated flow of the inflation fluid.~~

~~140. The delivery assembly of any one of claims 133 to 138, further comprising a pressure sensor configured to measure pressure of the inflation fluid,~~

~~wherein the adjustment of the flow of the inflation fluid is responsive to a predetermined function of the measured pressure and the determined diameter indication.~~

~~141. The delivery assembly of claim 139 or 140, wherein the pressure sensor is positioned within the inflation fluid.~~

~~142. The delivery assembly of claim 141, wherein the pressure sensor is positioned within the fluid flow channel.~~

~~143. A delivery method for a prosthetic valve comprising a plurality of intersecting struts, the method comprising:~~

~~coupling at least one flex sensor to at least one of the plurality of struts;~~

~~delivering the prosthetic valve to a predetermined anatomical location;~~

~~moving the delivered prosthetic valve between a radially compressed configuration and a radially expanded configuration; and~~

~~responsive to an output of the at least one flex sensor, generating a signal indicative of a diameter of the prosthetic valve.~~

~~144. The method of claim 143, wherein the at least one flex sensor comprises a non-bending portion and a bending portion configured to flex relative to the non-bending portion.~~

~~145. The method of claim 144, further comprising retracting at least one communication channel from the prosthetic valve, the at least one communication channel coupled to the at least one flex sensor.~~

~~146. The method of claim 145, further comprising applying a pull force on the at least one communication channel, the magnitude of the pull force higher than predetermined threshold magnitude,~~

~~wherein the at least one communication channel is detachable from the at least one flex sensor upon the application of the pull force.~~

~~147. The method of claim 143, wherein at least one of the at least one flex sensors is coupled to at least two intersecting struts.~~

~~148. The method of claim 143, wherein the coupling of the at least one flex sensor to the at least one strut comprising:~~

~~coupling a first of the at least one flex sensor to a first of the at least one strut; and~~

coupling a second of the at least one flex sensor to a second of the at least one strut, and wherein the first strut and the second strut are intersecting with each other.

149. The method of claim 143, further comprising pumping inflation fluid into an inflatable balloon positioned within the prosthetic valve, the pumped inflation fluid expanding the inflatable balloon thereby causing the moving of the delivered prosthetic valve from the radially compressed configuration to the radially expanded configuration.

150. A delivery method for a prosthetic valve comprising a plurality of intersecting struts, the method comprising:

coupling at least one flex sensor to at least one of the plurality of struts;

delivering the prosthetic valve to a predetermined anatomical location; and

moving the delivered prosthetic valve between a radially compressed configuration and a radially expanded configuration,

wherein the moving to the radially expanded configuration flexes a bending portion of the at least one flex sensor relative to a non-bending portion of the at least one flex sensor.

151. The method of claim 150, further comprising, responsive to an output of the at least one flex sensor, generating a signal indicative of a diameter of the prosthetic valve.

152. The method of claim 150, further comprising retracting at least one communication channel from the prosthetic valve, the at least one communication channel coupled to the at least one flex sensor.

153. The method of claim 152, further comprising applying a pull force on the at least one communication channel, the magnitude of the pull force higher than predetermined threshold magnitude,

wherein the at least one communication channel is detachable from the at least one flex sensor upon the application of the pull force.

154. The method of claim 150, wherein at least one of the at least one flex sensors is coupled to at least two intersecting struts.

155. The method of claim 150, wherein the coupling of the at least one flex sensor to the at least one strut comprising:

coupling a first of the at least one flex sensor to a first of the at least one strut; and

coupling a second of the at least one flex sensor to a second of the at least one strut, and

wherein the first strut and the second strut are intersecting with each other.

156. The method of claim 150, further comprising pumping inflation fluid into an inflatable balloon positioned within the prosthetic valve, the pumped inflation fluid expanding the inflatable balloon thereby causing the moving of the delivered prosthetic valve from the radially compressed configuration to the radially expanded configuration.

157. A delivery method for a prosthetic valve comprising a plurality of intersecting struts, the method comprising:

coupling at least one flex sensor to at least one of the plurality of struts, a communication channel coupled to the at least one flex sensor;

delivering the prosthetic valve to a predetermined anatomical location;

moving the delivered prosthetic valve between a radially compressed configuration and a radially expanded configuration; and

subsequent to the moving to the radially expanded configuration, retracting the communication channel from the prosthetic valve.

158. The method of claim 157, further comprising, responsive to an output of the at least one flex sensor, generating a signal indicative of a diameter of the prosthetic valve.

159. The method of claim 157, wherein the at least one flex sensor comprises a non-bending portion and a bending portion configured to flex relative to the non-bending portion.

160. The method of claim 157, further comprising applying a pull force on the at least one communication channel, the magnitude of the pull force higher than predetermined threshold magnitude,

wherein the at least one communication channel is detachable from the at least one flex sensor upon the application of the pull force.

~~161. The method of claim 157, wherein at least one of the at least one flex sensors is coupled to at least two intersecting struts.~~

~~162. The method of claim 157, wherein the coupling of the at least one flex sensor to the at least one strut comprising:~~

~~coupling a first of the at least one flex sensor to a first of the at least one strut; and~~

~~coupling a second of the at least one flex sensor to a second of the at least one strut, and~~

~~wherein the first strut and the second strut are intersecting with each other.~~

~~163. The method of claim 157, further comprising pumping inflation fluid into an inflatable balloon positioned within the prosthetic valve, the pumped inflation fluid expanding the inflatable balloon thereby causing the moving of the delivered prosthetic valve from the radially compressed configuration to the radially expanded configuration.~~

~~164. A delivery method for a prosthetic valve, the method comprising:~~

~~delivering the prosthetic valve to a predetermined anatomical location;~~

~~pumping inflation fluid into an inflatable balloon positioned within the prosthetic valve, the pumped inflation fluid inflating the inflatable balloon thereby causing the delivered prosthetic valve to be moved from a radially compressed configuration to a radially expanded configuration;~~

~~determining an indication of a radial diameter of the prosthetic valve and/or the inflatable balloon; and~~

~~responsive to the determined radial diameter indication, adjusting the flow of the inflation fluid.~~

~~165. The method of claim 164, wherein determining the diameter indication comprises determining a change in the radial diameter.~~

~~166. The method of claim 164, further comprising juxtaposing at least one radially translatable member with an outer surface of the inflatable balloon such that the inflation of the balloon radially translates the at least one radially translatable member,~~

~~wherein the radial diameter indication is responsive to a linear displacement sensor coupled to the at least one radially translatable member, an output of the linear displacement~~

~~sensor configured to be responsive to the radial translation of the at least one radially translatable member.~~

~~167. The method of claim 166, wherein the juxtaposing comprises surrounding the outer surface of the inflatable balloon.~~

~~168. The method of claim 166, further comprising, responsive to the output of the linear displacement sensor, determining an indication of a diameter of the prosthetic valve, the adjustment of the flow of the inflation fluid further responsive to the determined diameter indication.~~

~~169. The method of claim 164 or 165, further comprising juxtaposing at least one strain gauge with an outer surface of the inflatable balloon,~~

~~wherein the radial diameter indication is responsive to an output of the at least one strain gauge.~~

~~170. The method of claim 164 or 165, further comprising imaging the prosthetic valve,~~ ~~wherein the radial diameter indication is responsive to the imaging of the prosthetic valve.~~

~~171. The method of claim 170, further comprising positioning at least one radiopaque marker on the prosthetic valve, the imaging of the prosthetic valve comprising imaging the positioned at least one radiopaque marker.~~

~~172. The method of claim 164 or 165, further comprising imaging the inflatable balloon,~~

~~wherein the radial diameter indication is responsive to the imaging of the inflatable balloon.~~

~~173. The method of claim 172, further comprising positioning at least one radiopaque marker on the inflatable balloon, the imaging of the prosthetic valve comprising imaging the positioned at least one radiopaque marker.~~

~~174. The method of claim 164 or 165, further comprising coupling at least one flex sensor to at least one of a plurality of struts of the prosthetic valve,~~

~~wherein the radial diameter indication is responsive to an output of the at least one flex sensor.~~

~~175. The method of claim 174, wherein the at least one flex sensor comprises a non-bending portion and a bending portion configured to flex relative to the non-bending portion.~~

~~176. The method of claim 174, further comprising retracting at least one communication channel from the prosthetic valve, the at least one communication channel coupled to the at least one flex sensor.~~

~~177. The method of any one of claims 164 to 176, further comprising:~~

~~measuring pressure of the inflation fluid; and~~

~~responsive to the measured pressure, adjusting the flow of the inflation fluid.~~

~~178. The method of any one of claims 164 to 176, further comprising:~~

~~measuring pressure of the inflation fluid; and~~

~~responsive to a predetermined function of the determined diameter indication and measured pressure, adjusting the flow of the inflation fluid.~~

~~179. A delivery method for an inflatable balloon, the method comprising:~~

~~delivering an inflatable balloon to a predetermined anatomical location;~~

~~pumping inflation fluid into the delivered inflatable balloon, the pumped inflation fluid inflating the inflatable balloon;~~

~~juxtaposing at least one radially translatable member with an outer surface of the inflatable balloon such that the inflation of the balloon radially translates the at least one radially translatable member; and~~

~~responsive to a linear displacement sensor coupled to the at least one radially translatable member, adjusting the flow of the inflation fluid,~~

~~wherein an output of the linear displacement sensor is configured to be responsive to the radial translation of the at least one radially translatable member.~~

~~180. The method of claim 179, wherein the juxtaposing comprises surrounding the outer surface of the inflatable balloon.~~

~~181. The method of claim 180 or claim 181, further comprising, responsive to the output of the linear displacement sensor, determining an indication of a diameter of the inflatable balloon, the adjustment of the flow of the inflation fluid further responsive to the determined diameter indication.~~

~~182. The method of claim 181, wherein the determining the radial diameter indication comprises determining a change in the radial diameter.~~

~~183. The method of claim 181, further comprising measuring pressure of the inflation fluid,~~

~~wherein the adjustment of the flow of the inflation fluid is further responsive to a predetermined function of the determined diameter indication and the measured pressure.~~

~~184. The method of any one of claims 179 to 182, further comprising measuring pressure of the inflation fluid,~~

~~wherein the adjustment of the flow of the inflation fluid is further responsive to the measured pressure.~~

~~185. A delivery method for an inflatable balloon, the method comprising:~~

~~delivering an inflatable balloon to a predetermined anatomical location;~~

~~pumping inflation fluid into the delivered inflatable balloon, the pumped inflation fluid inflating the inflatable balloon;~~

~~juxtaposing at least one strain gauge with an outer surface of the inflatable balloon; and~~

~~responsive to the juxtaposed at least one strain gauge, adjusting the flow of the inflation fluid.~~

~~186. The delivery method of claim 185, further comprising, responsive to an output of the at least one strain gauge, determining an indication of a diameter of the inflatable balloon, the adjustment of the flow of the inflation fluid further responsive to the determined diameter indication.~~

~~187. The delivery method of claim 186, wherein the determining the radial diameter indication comprises determining a change in the radial diameter.~~

~~188. The method of claim 187, further comprising measuring pressure of the inflation fluid,~~

~~wherein the adjustment of the flow of the inflation fluid is further responsive to a predetermined function of the determined diameter indication and the measured pressure.~~

~~189. The method of any one of claims 185 to 187, further comprising measuring pressure of the inflation fluid,~~

~~wherein the adjustment of the flow of the inflation fluid is further responsive to the measured pressure.~~

~~190. A delivery method for an inflatable balloon, the method comprising:~~

~~delivering an inflatable balloon to a predetermined anatomical location;~~

~~pumping inflation fluid into the delivered inflatable balloon, the pumped inflation fluid inflating the inflatable balloon;~~

~~imaging the inflatable balloon; and~~

~~responsive to the imaging, adjusting the flow of the inflation fluid.~~

~~191. The method of claim 190, further comprising positioning at least one radiopaque marker on the inflatable balloon, the imaging of the prosthetic valve comprising imaging the positioned at least one radiopaque marker.~~

~~192. The method of claim 190, further comprising, responsive to the imaging, determining an indication of a diameter of the inflatable balloon, the adjustment of the flow of the inflation fluid further responsive to the determined diameter indication.~~

~~193. The method of claim 192, further comprising measuring pressure of the inflation fluid,~~

~~wherein the adjustment of the flow of the inflation fluid is further responsive to a predetermined function of the determined diameter indication and the measured pressure.~~

~~194. The method of any one of claims 190 to 192, further comprising measuring pressure of the inflation fluid,~~

~~wherein the adjustment of the flow of the inflation fluid is further responsive to the measured pressure.~~