What is claimed is:

[Claim 1] A dental imager for imaging an intraoral cavity, comprising:

an elongated handle having a proximal end and a distal end;

a head at the distal end of and pivotable relative to the elongated handle by way of a handle bellow or a ball joint, the head having a size and shape for select insertion into the intraoral cavity;

a pair of flexible lateral scanning arms positioned generally opposite one another and associated with the head of the elongated handle, each lateral scanning arm including a scanner associated therewith for imaging at least a portion of the intraoral cavity;

a lateral pad coupled to each of the pair of flexible lateral scanning arms at an angle of about 30-45 degrees relative thereto; and

a medial pad coupled to the head and configured to provide sliding support for the dental imager over the intraoral cavity, the lateral pads and the medial pad having a size and shape for substantial continuous engagement with the intraoral cavity while simultaneously substantially biasing the scanners at a relatively consistent distance from the intraoral cavity as the dental imager moves relative to the intraoral cavity during imaging.

[Claim 2] The dental imager of claim 1, including at least one central scanner mounted to the head and having a height relatively less than the medial pad, wherein each of the pair of flexible lateral scanning arms includes a top scanner and a bottom scanner.

[Claim 3] The dental imager of claim 2, including an activation sensor comprising an emitter in one of the pair of flexible lateral scanning arms and a detector in the other of the pair of flexible lateral scanning arms, the emitter and the detector being generally aligned such that a beam generated by the emitter is receivable by the detector during non-use and generally blocked by the intraoral cavity during use, wherein the top scanners or the bottom scanners mount to the pair of flexible lateral scanning arms at an angle between 30 and 60 degrees and the other of the top scanners or the bottom

scanners mount to the pair of flexible lateral scanning arms at an angle between 120 and 180 degrees.

[Claim 4] The dental imager of claim 1, including a front medial scanning arm and a rear medial scanning arm coupled to the head, wherein each of the pair of flexible lateral scanning arms include a compass tracking angular orientation thereof.

[Claim 5] The dental imager of claim 1, wherein the flexible lateral scanning arms couple to the head by a hinge, a spring, a resilient elastic material, a multi-axial pivot, or a ball joint and the head includes a front angled platform carrying a front scanner at an angle between 30 and 60 degrees and a rear angled platform carrying a rear scanner at an angle between 30 and 60 degrees.

[Claim 6] The dental imager of claim 5, including a front pad coupled to the front angled platform above the front scanner and a rear pad coupled to the rear angled platform above the rear scanner, wherein the head pivots relative to the elongated handle by way of a handle bellow or a ball joint.

[Claim 7] The dental imager of claim 1, including a communication circuit comprising a wireless transmitter, a USB connector, or a fiber optic connector integral with the elongated handle and in communication with the scanners selectively transmitting imaging data of the intraoral cavity, wherein the head is exchangeable with the elongated handle.

[Claim 8] A dental imager for imaging an intraoral cavity, comprising:

an elongated handle having a proximal end and a distal end;

a rotating head coupled to the distal end of the elongated handle by a ball joint permitting simultaneous longitudinal, lateral, and/or vertical 360 degree movement of the rotating head relative to the elongated handle, the rotating head including a platform having at least one lateral scanning arm coupled thereto with a scanner associated therewith for imaging at least a portion of the intraoral cavity; and

a guide having a size and shape for substantial continuous engagement with the intraoral cavity while simultaneously substantially biasing the scanner at a relatively consistent distance from the intraoral cavity as the dental imager moves relative to the intraoral cavity during imaging.

[Claim 9] The dental imager of claim 8, wherein the at least one lateral scanning arm comprises a pair of arcuate lateral scanning arms coupled to the head opposite each other.

[Claim 10] The dental imager of claim 8, wherein the guide comprises a roller rotatably coupled to the head configured to provide rolling support for the dental imager over the intraoral cavity or a pad having a surface permitting sliding movement over the intraoral cavity, including at least one central scanner mounted to the head having a height relatively less than the roller or the pad.

[Claim 11] The dental imager of claim 8, wherein the at least one lateral scanning arm couples to the head via a flexible coupling comprising one of a spring, a hinge, an accordion-shaped bellow, or a ball joint and includes a compass tracking its an angular orientation relative to the flexible coupling.

[Claim 12] The dental imager of claim 8, wherein the guide comprises a pair of lateral roller guides or a pair of lateral pads respectively coupled to the pair of arcuate lateral scanning arms about an axis permitting rotation relative thereto and at an angle of about 30-45 degrees relative thereto.

[Claim 13] The dental imager of claim 8, including a front medial scanning arm and a rear medial scanning arm coupled to the head about a hinge, a spring, a resilient elastic material, a multi-axial pivot, or a ball joint.

[Claim 14] The dental imager of claim 8, wherein the head includes a front angled platform carrying a front scanner at an angle between 30 and 60 degrees and a rear angled platform carrying a rear scanner at an angle between 30 and 60 degrees.

[Claim 15] The dental imager of claim 8, including a communication circuit integral with the elongated handle and in communication with the at least one scanner for selectively transmitting imaging data of the intraoral cavity.

[Claim 16] The dental imager of claim 8, wherein the head pivots relative to the elongated handle by way of a handle bellow or a ball joint, the at least one scanner is selected from the group consisting of a time of flight (ToF) scanner, a stereoscopic vision scanner, a light field moment imaging scanner, a fixed structured light scanner, a programmable structured light (DLP) scanner, a 3D or 4D ultrasound scanner, a digital camera scanner, a light emitting diode (LED) scanner, and a laser scanner, and the head detaches from the elongated handle.

[Claim 17] The dental imager of claim 8, including a front pad and a rear pad mounted to the head, wherein the at least one lateral scanning arm comprises a pair of static scanning arms immovably coupled to the head, each including one of the scanners.

[Claim 18] A dental imager for imaging an intraoral cavity, comprising:

an elongated handle having a proximal end and a distal end;

a head at the distal end of the elongated handle and having a size and shape for select insertion into the intraoral cavity;

at least one lateral scanning arm projecting outwardly from the head of the elongated handle and having a scanner associated therewith for imaging at least a portion of the intraoral cavity; and

a guide having a size and shape for substantial continuous engagement with the intraoral cavity while simultaneously substantially biasing the scanner at a relatively consistent distance from the intraoral cavity as the dental imager moves relative to the

intraoral cavity during imaging, wherein the guide comprises a roller rotatably coupled to the head and configured to provide rolling support for the dental imager over the intraoral cavity or a pad having a surface permitting sliding movement over the intraoral cavity.

[Claim 19] The dental imager of claim 18, wherein the at least one lateral scanning arm comprises a pair of arcuate lateral scanning arms coupled to the head opposite each other.

[Claim 20] The dental imager of claim 18, including a top scanner or a bottom scanner mounted to the at least one lateral scanning arm at an angle between 30 and 60 degrees and the other of the top scanner or the bottom scanner mounted to the least one lateral scanning arm at an angle between 120 and 180 degrees.

[Claim 21] The dental imager of claim 18, wherein the head comprises a rotating head coupled to the distal end of the elongated handle by a ball joint, thereby permitting simultaneous longitudinal, lateral, and/or vertical 360 degree movement relative thereto.

[Claim 22] The dental imager of claim 18, including at least one central scanner mounted to the head and having a height relatively less than the roller or the pad.

[Claim 23] The dental imager of claim 18, wherein the at least one lateral scanning arm couples to the head via a flexible coupling and includes a compass tracking an angular orientation of the at least one lateral scanning arm about the flexible coupling.

[Claim 24] The dental imager of claim 18, including a front medial scanning arm and a rear medial scanning arm coupled to the head by a hinge, a spring, a resilient elastic material, a multi-axial pivot, or a ball joint.

[Claim 25] The dental imager of claim 18, wherein the head includes a front angled platform carrying a front scanner at an angle between 30 and 60 degrees and a rear angled platform carrying a rear scanner at an angle between 30 and 60 degrees.

[Claim 26] The dental imager of claim 18, including a communication circuit integral with the elongated handle and in communication with the scanner for selectively transmitting imaging data of the intraoral cavity.

[Claim 27] The dental imager of claim 18, wherein the head pivots relative to the elongated handle by way of a handle bellow or a ball joint, the at least one scanner is selected from the group consisting of a time of flight (ToF) scanner, a stereoscopic vision scanner, a light field moment imaging scanner, a fixed structured light scanner, a programmable structured light (DLP) scanner, a 3D or 4D ultrasound scanner, a digital camera scanner, a light emitting diode (LED) scanner, and a laser scanner, and the head detaches from the elongated handle.

[Claim 28] The dental imager of claim 18, including a front pad and a rear pad mounted to the head, wherein the at least one lateral scanning arm comprises a pair of static scanning arms immovably coupled to the head, each including one of the scanners.

[Claim 29] A dental imager for imaging an intraoral cavity, comprising:

an elongated handle having a proximal end and a distal end;

a head at the distal end of the elongated handle and having a size and shape for select insertion into the intraoral cavity;

at least one lateral scanning arm projecting outwardly from and coupled to the head via a flexible coupling, the at least one lateral scanning arm having a scanner associated therewith for imaging at least a portion of the intraoral cavity;

a compass tracking an angular orientation of the at least one lateral scanning arm about the flexible coupling; and

a guide having a size and shape for substantial continuous engagement with the intraoral cavity while simultaneously substantially biasing the scanner at a relatively consistent distance from the intraoral cavity as the dental imager moves relative to the intraoral cavity during imaging.

[Claim 30] The dental imager of claim 29, wherein the at least one lateral scanning arm comprises a pair of arcuate lateral scanning arms coupled to the head opposite each other.

[Claim 31] The dental imager of claim 29, wherein the head comprises a rotating head coupled to the distal end of the elongated handle by a ball joint, thereby permitting simultaneous longitudinal, lateral, and/or vertical 360 degree movement relative thereto.

[Claim 32] The dental imager of claim 29, wherein the flexible coupling generally medially biases the at least one lateral scanning arm, and wherein said flexible coupling comprises one of a spring, a hinge, and accordion-shaped bellows, or a ball joint.

[Claim 33] The dental imager of claim 29, wherein the guide comprises a lateral roller guide or a lateral pad coupled to one end of the at least one lateral scanning arm at an angle of about 30-45 degrees relative thereto and about an axis permitting rotation relative thereto.

[Claim 34] The dental imager of claim 29, including a front medial scanning arm and a rear medial scanning arm coupled to the head about by a hinge, a spring, a resilient elastic material, a multi-axial pivot, or a ball joint.

[Claim 35] The dental imager of claim 29, wherein the head includes a front angled platform carrying a front scanner at an angle between 30 and 60 degrees and a rear angled platform carrying a rear scanner at an angle between 30 and 60 degrees.

[Claim 36] The dental imager of claim 35, wherein the guide comprises a front pad coupled to the front angled platform above the front scanner and a rear pad coupled to the rear angled platform above the rear scanner.

[Claim 37] The dental imager of claim 29, including a communication circuit integral with the elongated handle and in communication with the at least one scanner for selectively transmitting imaging data of the intraoral cavity.

[Claim 38] The dental imager of claim 29, wherein the head pivots relative to the elongated handle by way of a handle bellow or a ball joint, the at least one scanner is selected from the group consisting of a time of flight (ToF) scanner, a stereoscopic vision scanner, a light field moment imaging scanner, a fixed structured light scanner, a programmable structured light (DLP) scanner, a 3D or 4D ultrasound scanner, a digital camera scanner, a light emitting diode (LED) scanner, and a laser scanner, and the head detaches from the elongated handle.

[Claim 39] The dental imager of claim 29, including a front pad and a rear pad mounted to the head, wherein the at least one lateral scanning arm comprises a pair of static scanning arms immovably coupled to the head, each including one of the scanners.

[Claim 40] A dental imager for imaging an intraoral cavity, comprising:

an elongated handle having a proximal end and a distal end;

a head at the distal end of the elongated handle and having a size and shape for select insertion into the intraoral cavity;

at least one lateral scanning arm projecting outwardly from the head of the elongated handle and having a scanner associated therewith for imaging at least a portion of the intraoral cavity; and

a lateral roller guide or a lateral pad coupled to one end of the at least one lateral scanning arm at an angle of about 30-45 degrees relative thereto and having a size and shape for substantial continuous engagement with the intraoral cavity while

simultaneously substantially biasing the scanner at a relatively consistent distance from the intraoral cavity as the dental imager moves relative to the intraoral cavity during imaging.

[Claim 41] The dental imager of claim 40, wherein the at least one lateral scanning arm comprises a pair of arcuate lateral scanning arms coupled to the head opposite each other.

[Claim 42] The dental imager of claim 41, wherein one of a top scanner or a bottom scanner mounts to each of the pair of arcuate lateral scanning arms at an angle between 30 and 60 degrees and the other of the top scanner or the bottom scanner mounts to the pair of arcuate lateral scanning arms at an angle between 120 and 180 degrees.

[Claim 43] The dental imager of claim 40, wherein the head comprises a rotating head coupled to the distal end of the elongated handle by a ball joint, thereby permitting simultaneous longitudinal, lateral, and/or vertical 360 degree movement relative thereto.

[Claim 44] The dental imager of claim 40, including at least one central scanner mounted to the head and having a height relatively less than the lateral roller guide or the lateral pad.

[Claim 45] The dental imager of claim 40, wherein the at least one lateral scanning arm couples to the head via a flexible coupling that generally medially biases the at least one lateral scanning arm, and wherein said flexible coupling comprises one of a spring, a hinge, and accordion-shaped bellows, or a ball joint.

[Claim 46] The dental imager of claim 40, wherein the lateral roller guide couples to the at least one lateral scanning arm about an axis permitting rotation relative thereto.

[Claim 47] The dental imager of claim 40, including a front medial scanning arm and a rear medial scanning arm coupled to the head about by a hinge, a spring, a resilient elastic material, a multi-axial pivot, or a ball joint.

[Claim 48] The dental imager of claim 40, wherein the head includes a front angled platform carrying a front scanner at an angle between 30 and 60 degrees and a rear angled platform carrying a rear scanner at an angle between 30 and 60 degrees.

[Claim 49] The dental imager of claim 40, including a communication circuit integral with the elongated handle and in communication with the at least one scanner for selectively transmitting imaging data of the intraoral cavity.

[Claim 50] The dental imager of claim 40, wherein the head pivots relative to the elongated handle by way of a handle bellow or a ball joint, the at least one scanner is selected from the group consisting of a time of flight (ToF) scanner, a stereoscopic vision scanner, a light field moment imaging scanner, a fixed structured light scanner, a programmable structured light (DLP) scanner, a 3D or 4D ultrasound scanner, a digital camera scanner, a light emitting diode (LED) scanner, and a laser scanner, and the head detaches from the elongated handle.

[Claim 51] The dental imager of claim 40, including a front pad and a rear pad mounted to the head, wherein the at least one lateral scanning arm comprises a pair of static scanning arms immovably coupled to the head, each including one of the scanners.

[Claim 52] A dental imager for imaging an intraoral cavity, comprising:

an elongated handle having a proximal end and a distal end;

a head at the distal end of the elongated handle having a size and shape for select insertion into the intraoral cavity;

a front medial scanning arm and a rear medial scanning arm coupled to the head;

at least one lateral scanning arm projecting outwardly from the head of the elongated handle and having a scanner associated therewith for imaging at least a portion of the intraoral cavity; and

a guide having a size and shape for substantial continuous engagement with the intraoral cavity while simultaneously substantially biasing the scanner at a relatively consistent distance from the intraoral cavity as the dental imager moves relative to the intraoral cavity during imaging.

[Claim 53] The dental imager of claim 52, wherein the at least one lateral scanning arm comprises a pair of arcuate lateral scanning arms statically coupled to the head opposite each other.

[Claim 54] The dental imager of claim 53, wherein one of a top scanner or a bottom scanner mounts to each of the pair of arcuate lateral scanning arms at an angle between 30 and 60 degrees and the other of the top scanner or the bottom scanner mounts to the pair of arcuate lateral scanning arms at an angle between 120 and 180 degrees.

[Claim 55] The dental imager of claim 52, wherein the head comprises a rotating head coupled to the distal end of the elongated handle by a ball joint, thereby permitting simultaneous longitudinal, lateral, and/or vertical 360 degree movement relative thereto.

[Claim 56] The dental imager of claim 52, including at least one central scanner mounted to the head and having a height relatively less than the guide, wherein the at least one lateral scanning arm couples to the head via a flexible coupling comprising one of a spring, a hinge, and accordion-shaped bellows, or a ball joint.

[Claim 57] The dental imager of claim 56, including a lateral roller guide coupled to the at least one lateral scanning arm about an axis permitting rotation relative thereto.

[Claim 58] The dental imager of claim 52, wherein the head includes a front angled platform carrying a front scanner at an angle between 30 and 60 degrees and a rear angled platform carrying a rear scanner at an angle between 30 and 60 degrees.

[Claim 59] The dental imager of claim 58, wherein the guide comprises a front pad coupled to the front angled platform above the front scanner and a rear pad coupled to the rear angled platform above the rear scanner.

[Claim 60] The dental imager of claim 52, including a communication circuit integral with the elongated handle and in communication with the at least one scanner for selectively transmitting imaging data of the intraoral cavity.

[Claim 61] The dental imager of claim 52, wherein the head pivots relative to the elongated handle by way of a handle bellow or a ball joint, the at least one scanner is selected from the group consisting of a time of flight (ToF) scanner, a stereoscopic vision scanner, a light field moment imaging scanner, a fixed structured light scanner, a programmable structured light (DLP) scanner, a 3D or 4D ultrasound scanner, a digital camera scanner, a light emitting diode (LED) scanner, and a laser scanner, and the head detaches from the elongated handle.