CLAIMS:

1. A system for nanoscale precision programmable profiling, the system comprising:

a profiling module, wherein said profiling module has an inkjet for dispensing profiling material;

a subsystem for handling a roll-based superstrate, wherein said subsystem comprises a sidelay mechanism configured to prevent lateral displacement of said superstrate and a nip and drive roller assembly configured to maintain tension in a profiling zone, wherein said superstrate is used to form a contiguous film of said profiling material between said superstrate and a substrate;

a subsystem for curing said profiling material; and

a metrology module.

2. The system as recited in claim 1, wherein said profiling module further comprises:

a subsystem for alignment of said superstrate with said substrate.

3. The system as recited in claim 1, wherein said profiling module further comprises:

a subsystem for mitigation of bubbles when forming a contiguous film of said profiling material between said superstrate and said substrate.

4. The system as recited in claim 1, wherein said superstrate has a portion that is textured or patterned.

5. The system as recited in claim 1, wherein said substrate is fixed on a chuck that translates on a stage between said profiling and metrology modules.

6. The system as recited in claim 1, wherein said substrate is nominally flat.

7. The system as recited in claim 1, wherein said substrate is nominally non-flat.

8. The system as recited in claim 1, wherein said subsystem for curing said profiling material comprises an ultraviolet transparent vacuum chuck.

9. The system as recited in claim 1, wherein said metrology module comprises one or more of the following: a Shack-Hartmann wavefront sensor, an interferometer, an optical profilometer, a reflectometer, and a spectrophotometer.

10. The system as recited in claim 1, wherein said system is used to profile precision optical components or XR waveguide substrates.

11. The system as recited in claim 1, wherein said system is used to correct flatness or total thickness variation (TTV) errors in substrates.

12. The system as recited in claim 1, wherein said system is used to profile ophthalmic or trial lenses with higher order aberrations.

13. The system as recited in claim 1 further comprising:

a module for communication, data transfer and exchange with one of the following: a local computer, a remote computer, a cloud-base datacenter and a cloud-based workstation.

14. The system as recited in claim 1, wherein profiling material dispensing locations are determined using an algorithm run in one of the following locations: a local computer, a remote computer, and a cloud-based computer.