CLAIMS

1. A system configured to determine a position of output generated by an inspection subsystem in design data space, comprising:

an inspection subsystem comprising at least an energy source and a detector, wherein the energy source is configured to generate energy that is directed to a specimen, and wherein the detector is configured to detect energy from the specimen and to generate output responsive to the detected energy; and

one or more computer subsystems configured for:

selecting one or more alignment targets from a design for the specimen, wherein at least a portion of the one or more alignment targets comprises built in targets included in the design for a purpose other than alignment of inspection results to design data space, wherein at least the portion of the one or more alignment targets does not comprise one or more individual device features, and wherein at least the portion of the one or more alignment targets further comprises a corner of a structure that is formed of multiple, smaller structures;

aligning one or more images for the one or more alignment targets o one or more portions of the design corresponding to the one or more alignment targets;

determining one or more offsets between the one or more images and the one or more portions of the design based on results of aligning the one or more images;

aligning output generated by the inspection subsystem at one or more positions of the one or more alignment targets on the specimen to the one or more images for the one or more alignment targets;

determining one or more additional offsets between the output generated at the one or more positions of the one or more alignment targets on the specimen and the one or more images for the one or more alignment targets based on results of aligning the output; and

determining design data space positions of output generated by the inspection subsystem at other positions on the specimen based on the one or more offsets, the one or more additional offsets, and specimen space positions of the output generated at the other positions on the specimen.

2. The system of claim **1**, wherein the corner of the structure comprises a corner of a metrology cell.

3. The system of claim **1**, wherein at least the portion of the one or more alignment targets further comprises a center of a metrology cell.

4. The system of claim **1**, wherein the corner of the structure comprises a corner of a static random access memory structure.

5. The system of claim **1**, wherein at least the portion of the one or more alignment targets further comprises an alignment target designed for use by a lithography exposure tool.

6. The system of claim **1**, wherein at least the portion of the one or more alignment targets is not selected based on one or more modes of the inspection subsystem used to generate the output at the one or more positions of the one or more alignment targets on the specimen.

7. The system of claim 1, wherein none of the alignment targets comprise any of the individual device features.

8. The system of claim 1, wherein at least an additional portion of the one or more alignment targets comprises a portion of the individual device features.

9. The system of claim 1, wherein said selecting is performed without using a physical version of the specimen.

10. The system of claim 1, wherein the one or more computer subsystems are further configured for generating one or more simulated images illustrating how the one or more portions of the design will appear in images generated by the inspection subsystem, and wherein said aligning the one or more images comprises aligning the one or more images to the one or more simulated images.

11. The system of claim 1, wherein determining the one or more offsets is performed for each inspection frame of the output generated by the inspection subsystem for the specimen.

12. The system of claim 1, wherein determining the one or more additional offsets is performed for each inspection frame of the output generated by the inspection subsystem for the specimen.

13. The system of claim 1, wherein determining the design data space positions comprises:

determining one or more further offsets between the output generated by the inspection subsystem at the other positions and the design based on the one or more offsets and the one or more additional offsets; and

determining the design data space positions based on the one or more further offsets and the specimen space positions of the output generated at the other positions on the specimen.

14. The system of claim 13 wherein determining the one or more further offsets is performed for each inspection frame of the output generated by the inspection subsystem for the specimen.

15. The system of claim **1**, wherein at least the portion of the one or more alignment targets further comprises two or more alignment targets having the same characteristics.

16. The system of claim **15**, Wherein aligning the one or more images comprises:

generating an image for one of the two or more alignment targets by imaging the one alignment target on the specimen with the inspection subsystem;

aligning the image for the one alignment target with a portion of the design for the one alignment target; and

aligning the image for the one alignment target with images generated by the inspection subsystem for others of the two or more alignment targets thereby aligning the images for the others of the two or more alignment targets to the portion of the design.

17. The system of claim **1**, wherein at least the portion of the one or more alignment targets further comprises two or more alignment targets having the same characteristics except for within die position.

18. The system of claim **17**, wherein aligning the one or more images comprises:

generating an image for one of the two or more alignment targets by imaging the one alignment target on the specimen with the inspection subsystem; and

aligning the image for the one alignment target with a portion of the design for the one alignment target.

19. The system of claim **18**, wherein aligning the output comprises aligning the output generated by the inspection subsystem at the one or more positions of the one or more alignment targets on the specimen to the image for the one alignment target.

20. The system of claim **1**, wherein the one or more computer subsystems are further configured for detecting defects on the specimen based on the output generated at the other positions and determining one or more parameters used for said detecting based on the design data space positions of the output generated at the other positions.

21. The system of claim **1**, wherein the one or more computer subsystems are further configured for detecting defects on the specimen based on the output generated at the other positions and determining design data space positions of the defects based on the design data space positions of the output generated at the other positions.

22. The system of claim **1**, wherein the specimen comprises a wafer.

23. The system of claim **1**, wherein the energy directed to the specimen comprises light, and wherein the energy detected from the specimen comprises light.

24. The system of claim **1**, wherein the energy directed to the specimen comprises electrons, and wherein the energy detected from the specimen comprises electrons.

25. A non-transitory computer-readable medium, storing program instructions executable on a computer system for performing a computer-implemented method for determining a position of output generated by an inspection subsystem in design data space, wherein the computer-implemented method comprises:

selecting one or more alignment targets from a design for a specimen, wherein at least a portion of the one or more alignment targets comprises built in targets included in the design for a purpose other than alignment of inspection results to design data space, wherein at least the portion of the one or more alignment targets does not comprise one or more individual device features, and wherein at least the portion of the one or more alignment targets further comprises a corner of a structure that is formed of multiple, smaller structures;

aligning one or more images for the one or more alignment targets to one or more portions of the design corresponding to the one or more alignment targets;

determining one or more offsets between the one or more images and the one or more portions of the design based on results of aligning the one or more images;

aligning output generated by an inspection subsystem at one or more positions of the one or more alignment targets on the specimen to the one or more images for the one or more alignment targets, wherein the inspection subsystem comprises at least an energy source and a detector, wherein the energy source is configured to generate energy that is directed to a specimen, and wherein the detector is configured to detect energy from the specimen and to generate output responsive to the detected energy;

determining one or more additional offsets between the output generated at the one or more positions of the one or more alignment targets on the specimen and the one or more images for the one or more alignment targets based on results of aligning the output; and

determining design data space positions of output generated by the inspection subsystem at other positions on the specimen based on the one or more offsets, the one or more additional offsets, and specimen space positions of the output generated at the other positions on the specimen.

26. A computer-implemented method for determining a position of output generated by an inspection subsystem in design data space, comprising:

selecting one or more alignment targets from a design for a specimen, wherein at least a portion of the one or

more alignment targets comprises built in targets included in the design for a purpose other than alignment of inspection results to design data space, wherein at least the portion of the one or more alignment targets does not comprise one or more individual device features, and wherein at least the portion of the one or more alignment targets further comprises a corner of a structure that is formed of multiple, smaller structures;

aligning one or more images for the one or more alignment targets to one or more portions of the design corresponding to the one or more alignment targets;

determining one or more offsets between the one or more images and the one or more portions of the design based on results of aligning the one or more images;

aligning output generated by an inspection subsystem at one or more positions of the one or more alignment targets on the specimen to the one or more images for the one or more alignment targets, wherein the inspection subsystem comprises at least an energy source and a detector, wherein the energy source is configured to generate energy that is directed to a specimen, and wherein the detector is configured to detect energy from the specimen and to generate output responsive to the detected energy;

determining one or more additional offsets between the output generated at the one or more positions of the one or more alignment targets on the specimen and the one or more images for the one or more alignment targets based on results of aligning the output; and

determining design data space positions of output generated by the inspection subsystem at other positions on the specimen based on the one or more offsets, the one or more additional offsets, and specimen space positions of the output generated at the other positions on the specimen, wherein steps of the method are performed by one or more computer systems.