

# Integrated System Solutions with MEMS Sensors

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The breathtaking growth of the implementation of MEMS sensors into high volume consumer applications has created a strong and unprecedented demand for smaller and more powerful system solutions of these sensors.

To meet this demand, the major MEMS suppliers have started to offer systems on a board, systems in a package, and integrated single die solutions.

The integration of multiple sensors into a package offers a number of advantages including reduced design cycle, increased degrees of freedom enabling a larger number of applications, shorter application development time, reduced number of external components required, higher performance and reliability, reduced cost, easy assembly decreasing the failure rate during the assembly, and smaller size.

The integrated system solutions in a package can include various components such as accelerometers, gyroscopes, magnetometers, pressure sensors, MEMS microphones, a microcontroller, an interface IC, and connectivity components to wirelessly interface with the outside world. This complexity, however, requires a higher degree of sensor and application expertise to enable the developers to develop the target applications in a timely manner.

The integration of multiple sensors into a system allows exciting applications in portable devices, remote controllers, personal navigation systems, advanced video games, automotive, unmanned aerial vehicles, and service robots.

This presentation discusses sensor integration starting with a system-on-a-board solution, some of the currently available system-in-a-package solutions, and the trends for future smart sensor system solutions.