The Helmholtz equation is frequently used as a model for sonic inversion for both geophysical and medical applications. In this paper we describe explicitly the use of multi-sources, i.e., the simultaneous ‘firing’ of all transducers for the case of medical, and all geophones for the case of geophysical inversion, resulting in a novel inversion procedure that enabling the circumvention of time-intensive computation in inversion. We are thus able to e.g., accurately view a beating heart live for the case of medical applications.