Figure 1. A FirstSimVR fire investigation scenario where the left side of the image represents the real world with physical objects and the right side represents the visually rendered scene. The user can physically touch the walls and tablet props which are aligned with the visual elements as the investigator prepares to take pictures using a new camera/tablet technology.

Figure 2. A FirstSimVR firefighter scenario of two firefighters in the same environment where visual conditions are normally bad due to smoke, fire, and lighting. Each user sees the scene from their own perspective while wearing actual firefighter gear. In addition to feeling physical elements and visually representing the real-world scene, futuristic augmented reality interfaces are evaluated (thermal imaging and floorplans obtained via computer-vision scanning of the scene).

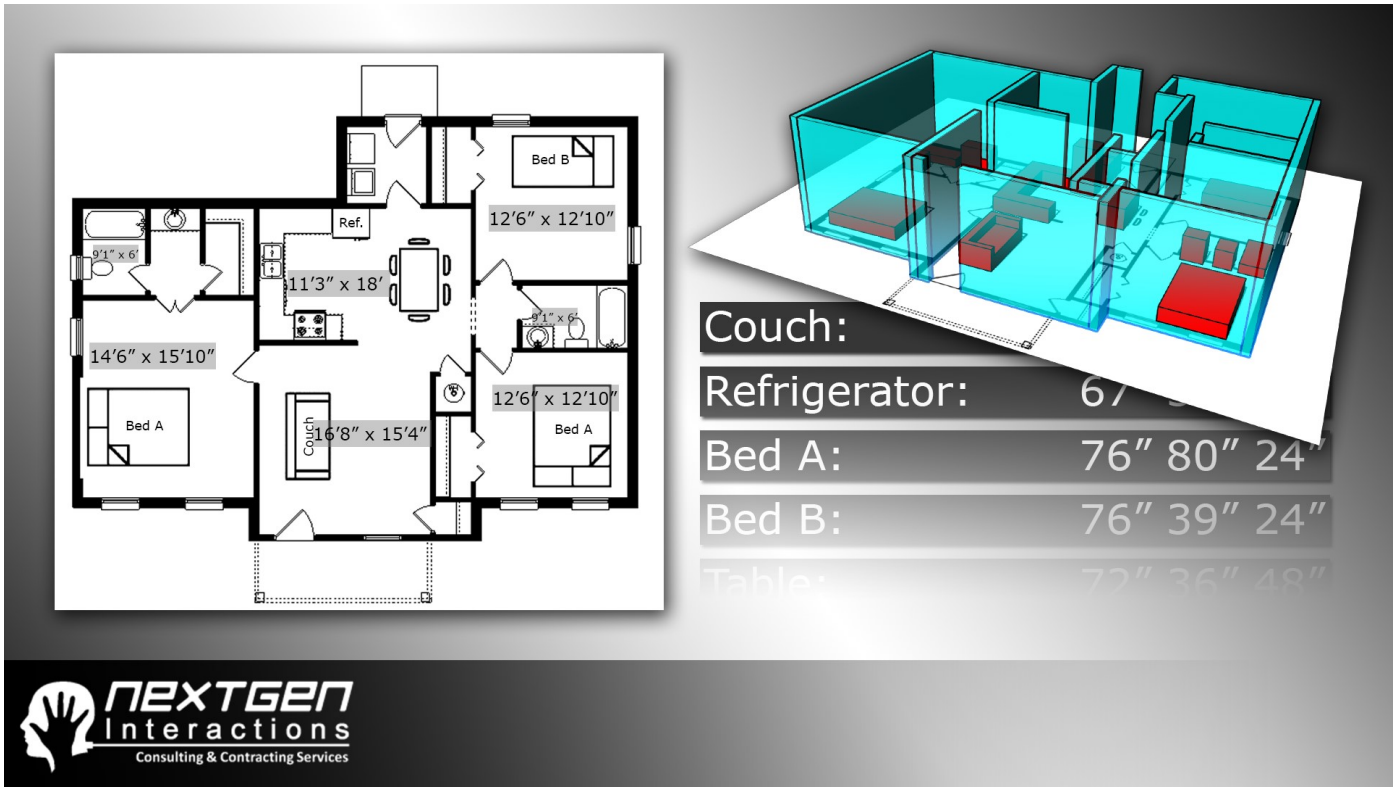


Figure 3. FirstSimVR blueprint documentation with dimensions of physical parts for a single-family home fire scenario. The walls and furniture are physically represented by easy to set up Styrofoam blocks. Alternatively, simple wooden structures and real furniture can be used in areas where higher physical fidelity is required.

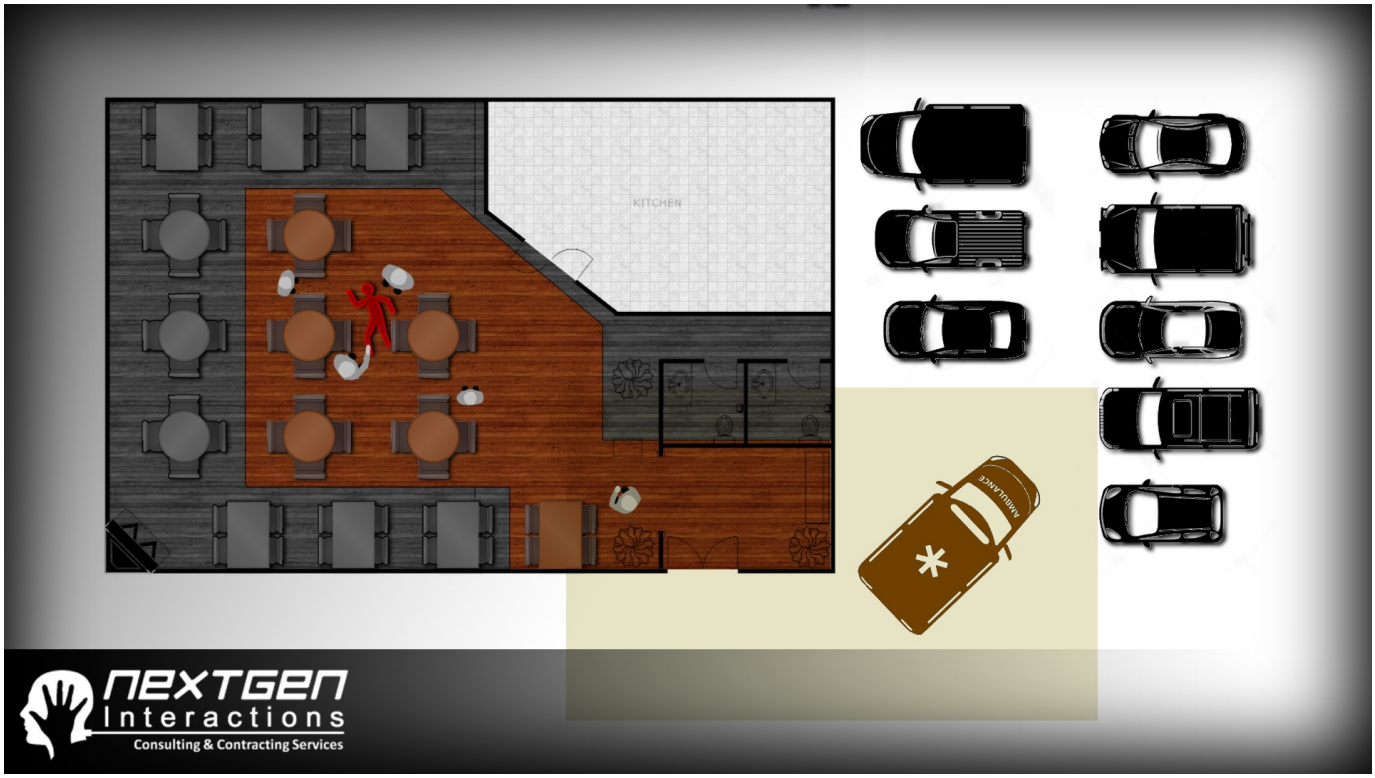


Figure 4. FirstSimVR layout of a heart attack in restaurant scenario. The victim (in red physically represented by a mannequin) is surrounded by tracked physical chairs/tables and bystanders (some real, some simulated) that EMS must move and navigate through. Only the colored parts need to be tracked and physically represented as users are unlikely to enter the grey areas.

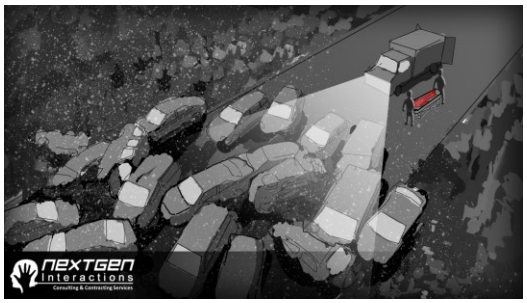
	1. EMS respond to a multiple car pile-up on a highway during rush-hour in winter weather that includes black ice. The first responder reviews information and discusses with a support call center via voice and video on a tablet device.
	2. As the paramedic discusses the situation with remote support, the paramedics further assesses the situation and prioritizes tasks based on 1) his/her own judgment of the scene, 2) information provided by the call center, and 3) a new experimental interface.
	3. Two paramedics approach the highest-priority car to investigate the victim's status.
	4. After assessing the situation, the two paramedics decide it is best to transport a victim (where the stretcher is physically represented by a tracked stretcher and the victim (physically represented by a tracked mannequin) to the ambulance.
	5. Paramedics further assess the victim's status and perform first aid using tracked physical equipment on the victim represented physically by the mannequin.

Figure 5. Example storyboard of an FirstSimVR accident-response scenario.