Y.Y. HSIEH, D.S. HUANG, D.A. WANG. Design, development and modeling of the geront-vehicle with a movable steering-wheel system. Gerontechnology 2010;9(2):290; doi: 10.4017/gt.2010.09.02.139.00. **Purpose** The technology of a movable steering-wheel system has been proposed and developed in the automotive industry since its advantage of easy operation and space-saving[1-5]. The geront-vehicle with a movable steering-wheel system provides a simple operating mechanism for older adults in comfort and safety. It will help older people to maintain their mobility and independence in life[6]. In this study a prototype of the geront-vehicle with movable steering-wheel system has been built for elders or those with disabilities. This study also employed the dynamics model of the geront-vehicle to simulate and analyze the motion of the vehicle. **Method** The drawings and physical properties of the geront-vehicle with steering-wheel system were built by using Solidworks software, such as the center of gravity, center of mass, and the moment of inertia, etc. In addition, the equations of motion of the vehicle were derived from the well-known bicycle model[7-8]. Combining the moment of inertia and the equations of motion, the directional stability of the vehicle was calculated by using the Simulink of Matlab software. **Result & Discussion** The 3-D configuration of the geront-vehicle with a movable steering-wheel system was drawn. Based on the dimension of the drawings, a prototype vehicle was built (*Figure 1*). The result shows that an inclined angle of the steering wheel easily adjusts for fitting driver's posture. In the dynamics simulation, static margin, a characteristic of the steady-state handling behaviour of vehicle, is calculated. By using this dynamics model, the neutral steer point of the geront-vehicle with a movable steering-wheel system was found. The vehicle has a little understeer (*Figure 2*). The results contribute to the design of control systems for increasing the stability of vehicle handling.

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Figure 1. A prototype vehicle with a steering-wheel systems

Figure 2. The understeer behaviour of the prototype geront-vehicle with a steering-wheel systems