

## **HazMat [Hazardous Materials] SCoat**

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For the past few years, the Center for Software Engineering (USC-CSE) has applied the MBASE software engineering process to developing software systems. However, the vast majority of past 577a projects has involved building web-based systems where much success has been shown. In conjunction with the High Dependability Computing Program (HDCP), CSE would like to be able to apply the MBASE software engineering process to the area of robotic development.

Therefore, the Center for Software Engineering would like to develop a rover to be able to discover hazardous materials in a building/room. High-level capabilities of the rover include an operator being able to drive the rover around obvious obstacles with the help of a camera and a robot controller device in order to detect hazardous materials and autonomous movement of the rover to an object identified by the operator while performing insignificant obstacle avoidance using such sensors as camera and/or rangefinders.

During the course of the development, the software to control the robot will be first tested via simulation. A tool such as Player (<http://playerstage.sourceforge.net>), developed by the USC Robotics Group, can be used to simulate the functionality of the rover. Once simulation is confirmed to work, the system can then be tested on an actual rover