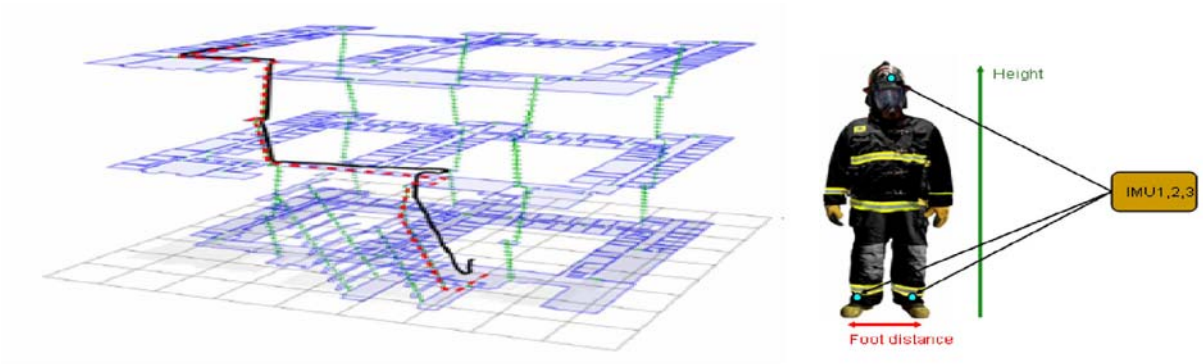
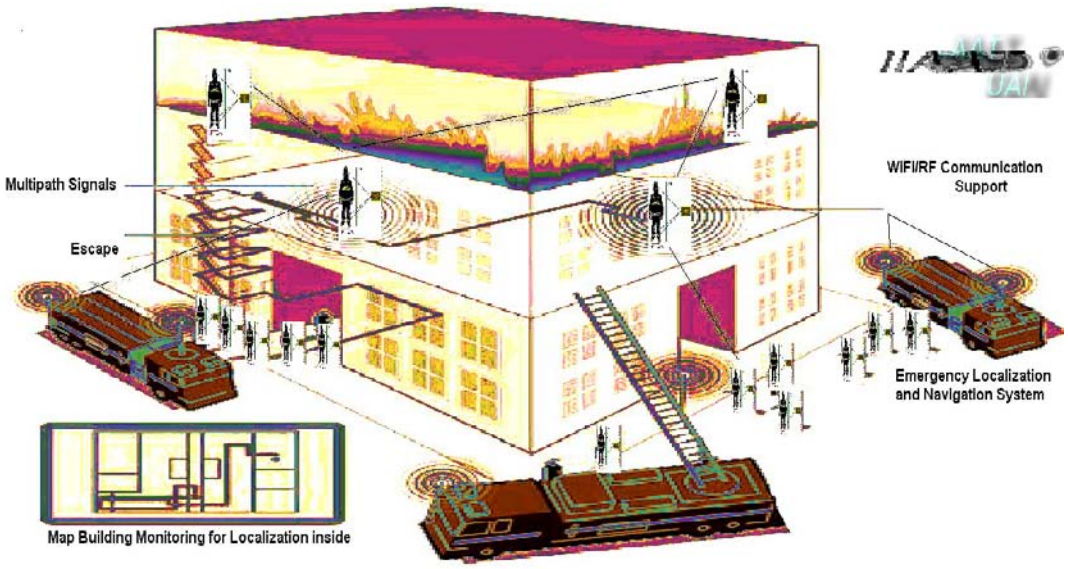
Project 8. Fire Fighters Indoor/Outdoor Localization and Navigation System

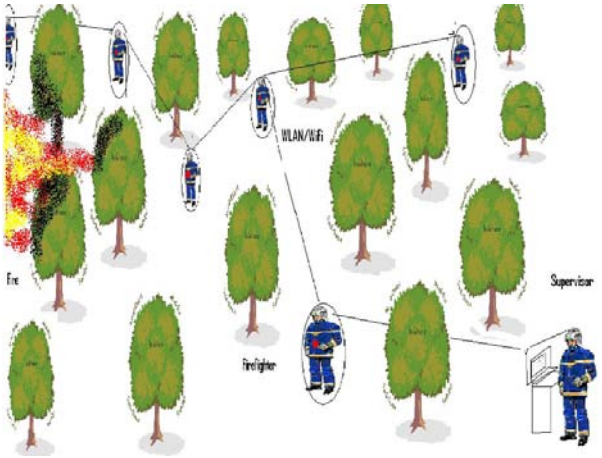
Both in outdoor and indoor application, the problem of fire Fighters localization and Navigation system in known and unknown environment is a very important for safety of them and the people whom have to be rescued .In our work we purpose a solution to this problem using in outdoor ; GPS coupled with inertial sensors as accelerometers ,gyroscopes and compass using an adaptive filter able to estimate the navigation state as: position, velocity, heading…etc. for example in forest, when fireman are acting inside fire, this system with supervisor can aid them and constantly linked by communication system as WLAN and WiFi to permit the guidance. In indoor application, the problem is more complicated because the non working of GPS, we have to develop another solution and it is what we purpose in our work, using only inertial sensors, compass and altimeter for navigation and RFID and/or WLAN/WiFi to communicate from inside the building to the outside sending position and direction of fireman who is as blind in fire, so the supervisor can guide him to save people who have to be rescued or guide him outside the building. This solution will permit to fireman to penetrate using optimum trajectory and fight fire as well as it is possible.



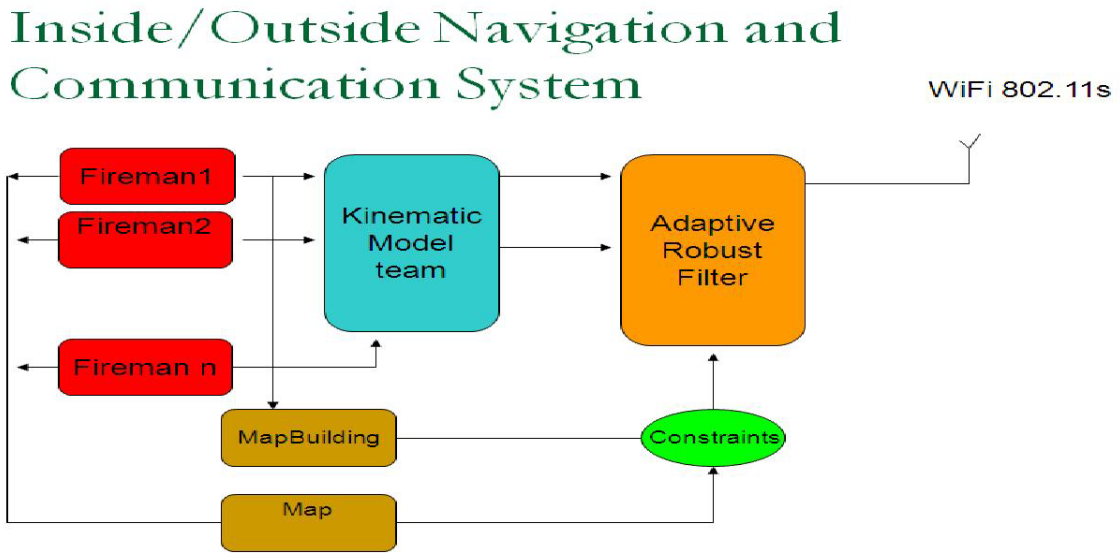
Indoor Localization and Navigation



Outdoor (left) and indoor (right) Localization and guidance system



Outdoor Localization and guidance system



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