**Cyber physical systems – Glósur**

Chapter 1

1. **History of Terms**Mark Weiser created the term “ubiquitous computing” (anytime, anywhere, with anything).  
     
   Mark Weiser also created the term “invisible computing” (computer that is integrated into a product).  
     
   Mark Weiser also created the term “pervasive computing” (Focuses on the exploitation of already available technology.  
     
   **Embedded systems:** information processing systems embedded into enclosing products  
   Characteristics:  
    real-time constraints  
    dependability  
    efficiency requirements  
     
   **Cyber Physical Systems:** integrations of computation and physical processes  
     
   **Internet of Things**: describes the pervasive presence of a variety of devices – such as sensors, actuators and mobile phones – which, through unique addressing schemes are able to communicate with each other to reach a common goal.  
     
   **Industry 4.0**: The exploitation of Internet of Things technology for production
2. **Opportunities**\* Transportation and mobility  
    **-** Automotive electronics  
    Airbag control systems, engine control systems, navigation systems, anti-  
    braking systems, electronic stability programs, air-conditioning, anti-theft  
    protection and driver assistance systems.  
     
    - Avionics  
    Flight control systems, anti-collision systems, pilot information systems,  
    autopilot  
     
    - Railways  
    Advanced signaling, autonomous rail-based transportation  
     
      
   - Maritime engineering  
   Navigation, safety, optimizing the operation in general, bookkeeping  
     
   - New concepts for mobility  
    e-bikes, e-scooters, collective taxis  
     
   \* **Mechanical engineering**  
    Machinery, fabrication equipment, factory automation, radio frequency  
    identification  
     
   \* **Robotics**   
   \* **Power engineering and the smart grid**   
   \* **Civil engineering** Health monitoring, mountains, volcanos, bridges and damns  
     
   \* **Disaster recovery**  
    Flexible communication infrastructure  
     
   \* **Smart buildings** Increase comfort level in buildings, reduce energy consumption withing  
    buildings, improve safety and security  
     
   **\* Agricultural engineering** Regulations for traceability  
     
   \* **Health sector and medical engineering** Detecting diseases, machine learning data analysis techniques to detect  
    increased risk, devices to help handicapped patients,