

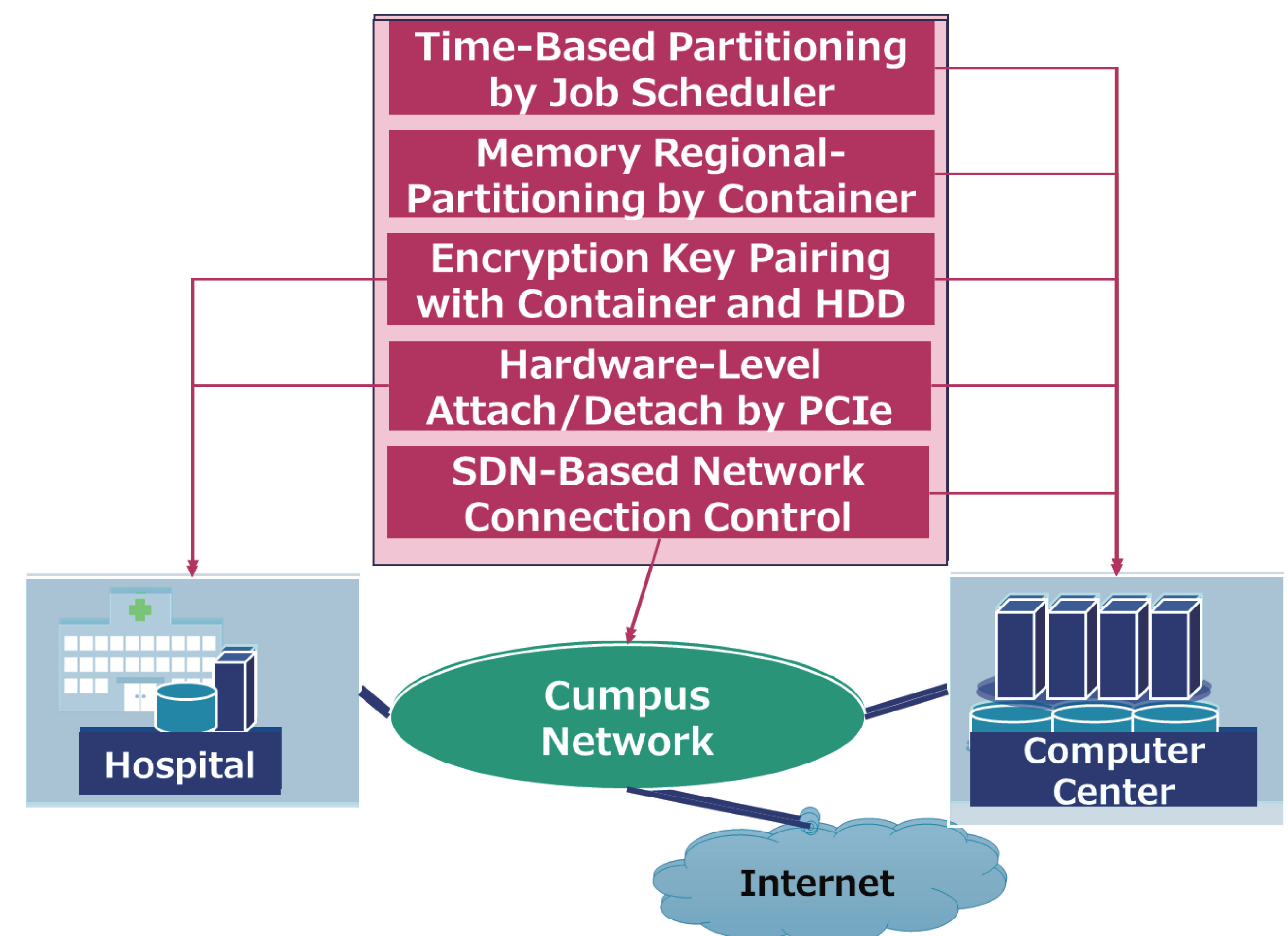
Dynamic and Secure Staging for Medical Data to Be Processed in The Computer Center

Dynamic and Secure Staging for Medical Data to Be Processed in The Computer Center

Dynamic and secure staging mechanism is developed to process medical data by using high performance computers in the computer center. The system is composed of five secure partitioning technologies including time-based partitioning by a job scheduler, memory regional-partitioning by container, hardware-level attach/detach by PCI Express, encryption key pairing with container and hardware device, and SDN-based network connection control. With combination of those technologies, this system provides various enhanced security level appropriate for the medical data concealment of each data to realize approval of medical data usage out of the hospital location.

Partitioning Mechanism and Intensity

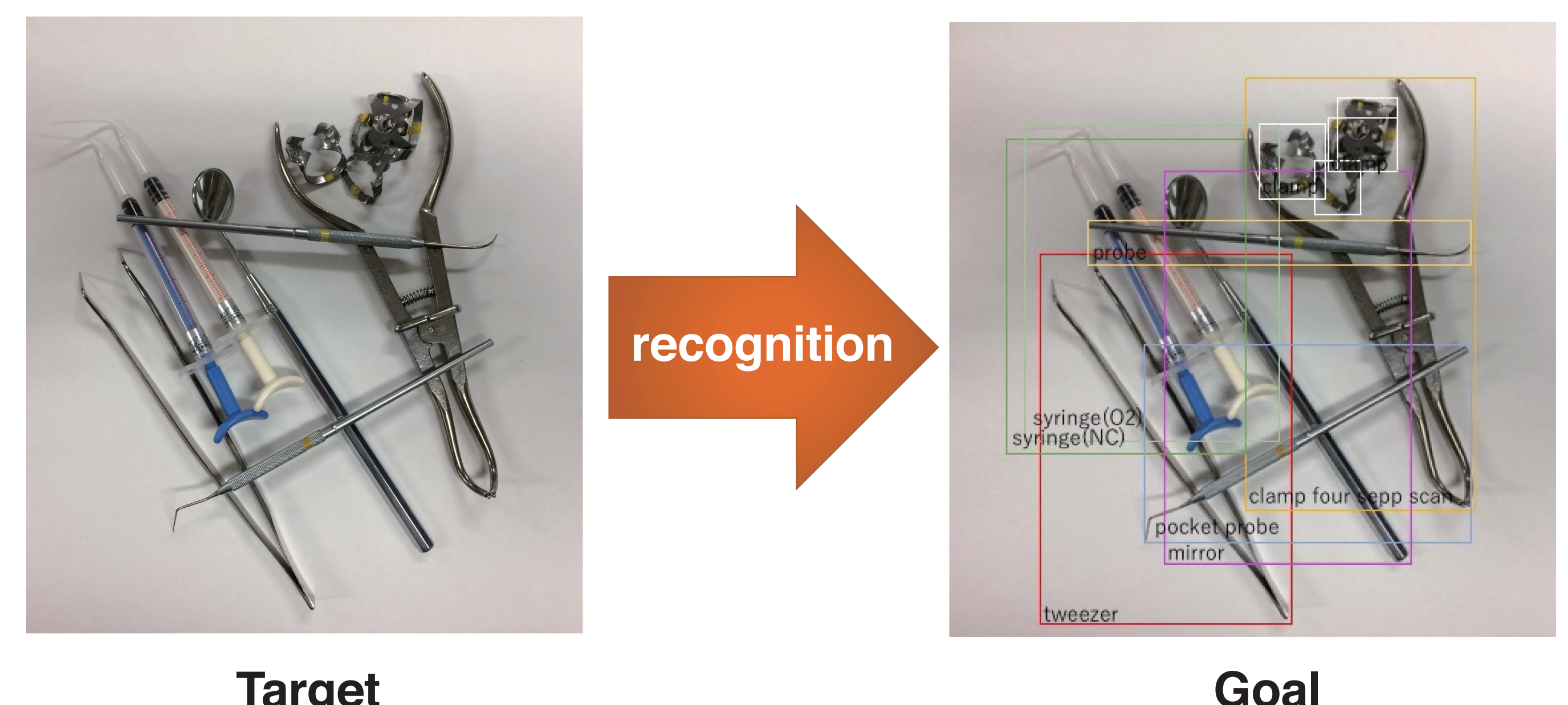
Mechanism	Description	Partitioning Intensity	
Scheduler	Time-based separation	weak	data load only during job execution
Container	Erase Container after Job execution	weak	clear memory data w / container
EE DISC	Atacch / Detach HDD by ExpEther	strong	equivalent to device detachment
EE NIC	Atacch / Detach NIC by ExpEther	moderate	equivalent to cable disconnect
SDN EE	ExpEther Path Separation by SDN	moderate	partitioning at IP unreachable layer
SDN IP	IP path Separation by SDN	moderate	partitioning at IP unreachable layer
Key Pairing	Encryption Key Pairing w/Disk	moderate	pairing specific container and dvce



Secure Staging System Diagram and Dynamic Secure Partitioning Mechanism

myDentalAI

myDentalAI is a machine that performs stochastic reasoning. In probabilistic reasoning, it is possible to estimate the state most likely to occur from the combination by considering what kind of probability distribution various events occur. That is, when inputting dental treatment or disease state into a machine, it outputs a remarkable treatment result. Furthermore, myDentalAI gets the behavior history and condition of the dentist in the treatment room. It is necessary for the behavior history to include information that can infer the treatment content. Furthermore, Panorama / Dental images before and after treatment are recognized by AI, and changes in images due to treatment contents are learned. If a consent is obtained from a patient for photographing his/her oral cavity, more accurate suggestion will be available.



Movie recognition: firstly, a tray (table) attached to the dental chair is photographed with a video camera, AI is made to recognize therapeutic instruments placed on the tray, and the condition (presence/absence, movement, Disappearance) to determine the treatment content.

