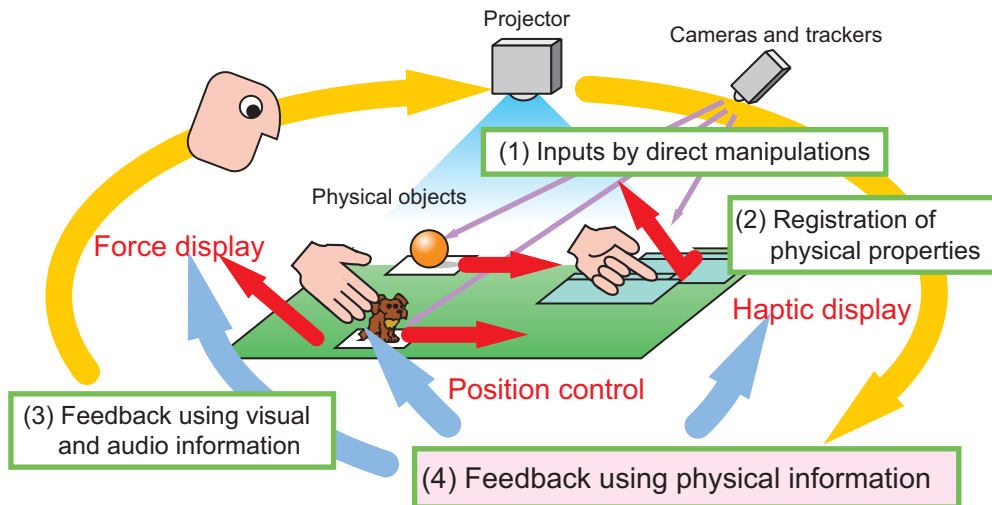


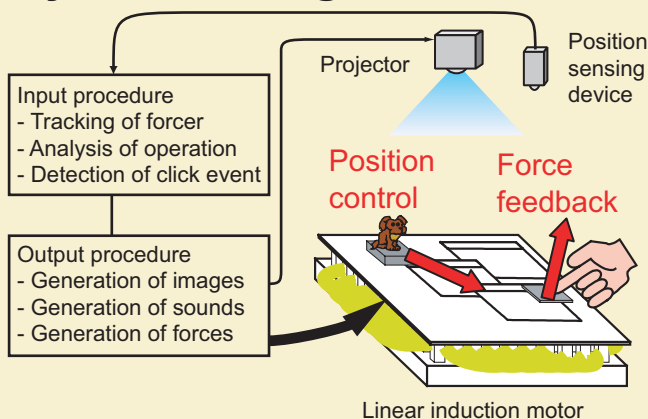
# Proactive Desk

## Concept

Proactive Desk enables the user to provide physical feedback from digital world.

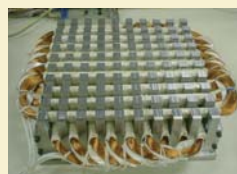


## System configuration

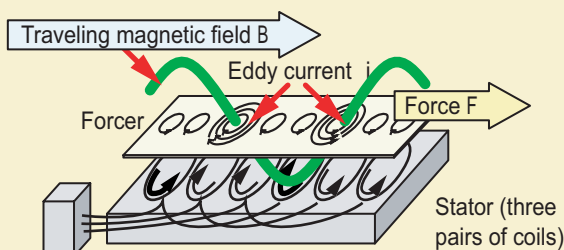


## What's Linear Induction Motor?

The LIM has same mechanism as a widely used standard AC three phase motor. The Proactive Desk uses two sets of LIM cores, and coils are placed in orthogonal orientation inside the desk.



Cores and coils in stator



### Mechanism for generating forces

1. Coils generate traveling magnetic field  $B$ .
2. Avoiding the magnetic field, eddy current  $i$  is induced on the Forcer.
3. The current  $i$  and magnetic field  $B$  generate force  $F$  on the Forcer using Fleming's left hand rule.

## Features

### Powerful force display

- User can feel two dimensional force of 11N in a maximum.

### Simple appearance

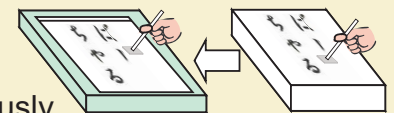
- The equipment for generating forces is concealed inside the desk.
- Any wires or mechanical link structures are not required for actuating physical objects.

### Position control of real objects

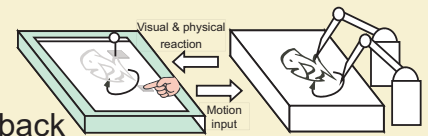
- Real objects are able to be used as input devices. Simultaneously, it's available as output devices.

## Applications

Experiencing other people's operation vicariously



Teleoperation with haptic feedback



Haptized virtual painting



Graphical and haptic user interface

