
INDE/TC 455: User Interface Design

Autumn 2008

Class #6

[URL:courses.washington.edu/ie455](http://courses.washington.edu/ie455)

TA Moment...

- Prof. Furness - some comments about
 - APA guidelines for write-ups..mainly for references
 - Modules vs. lectures on course website

Review Class #5 + Lab #2

- Interface Tools
 - Furness 10 Commandments
 - Murphy's laws
- Interface Design considerations
 - Use of subjects
- Phase 2: Characterizing the problem
- Team activity: Thinking Hats problem

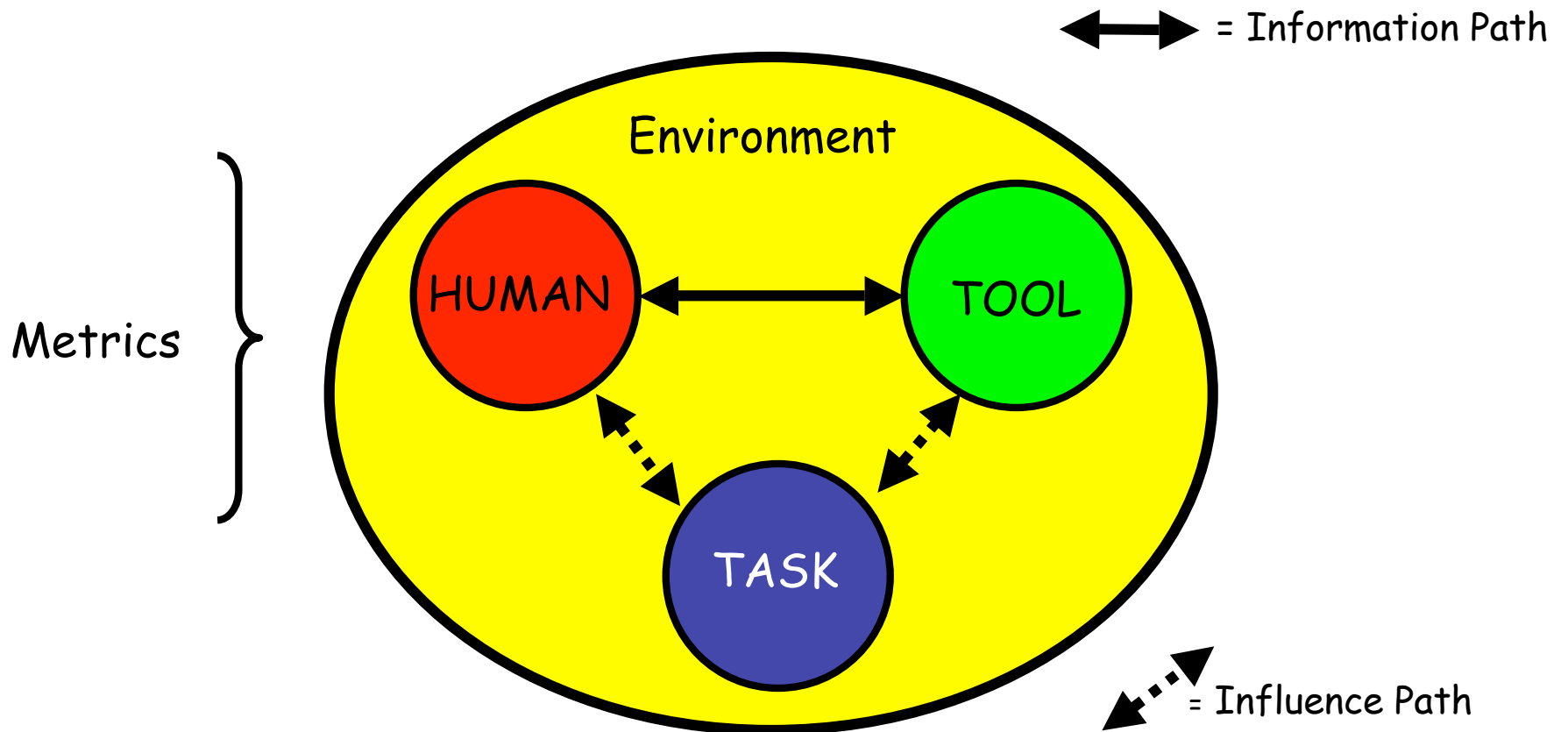
Thinking Hats Problem

- What are your solutions?

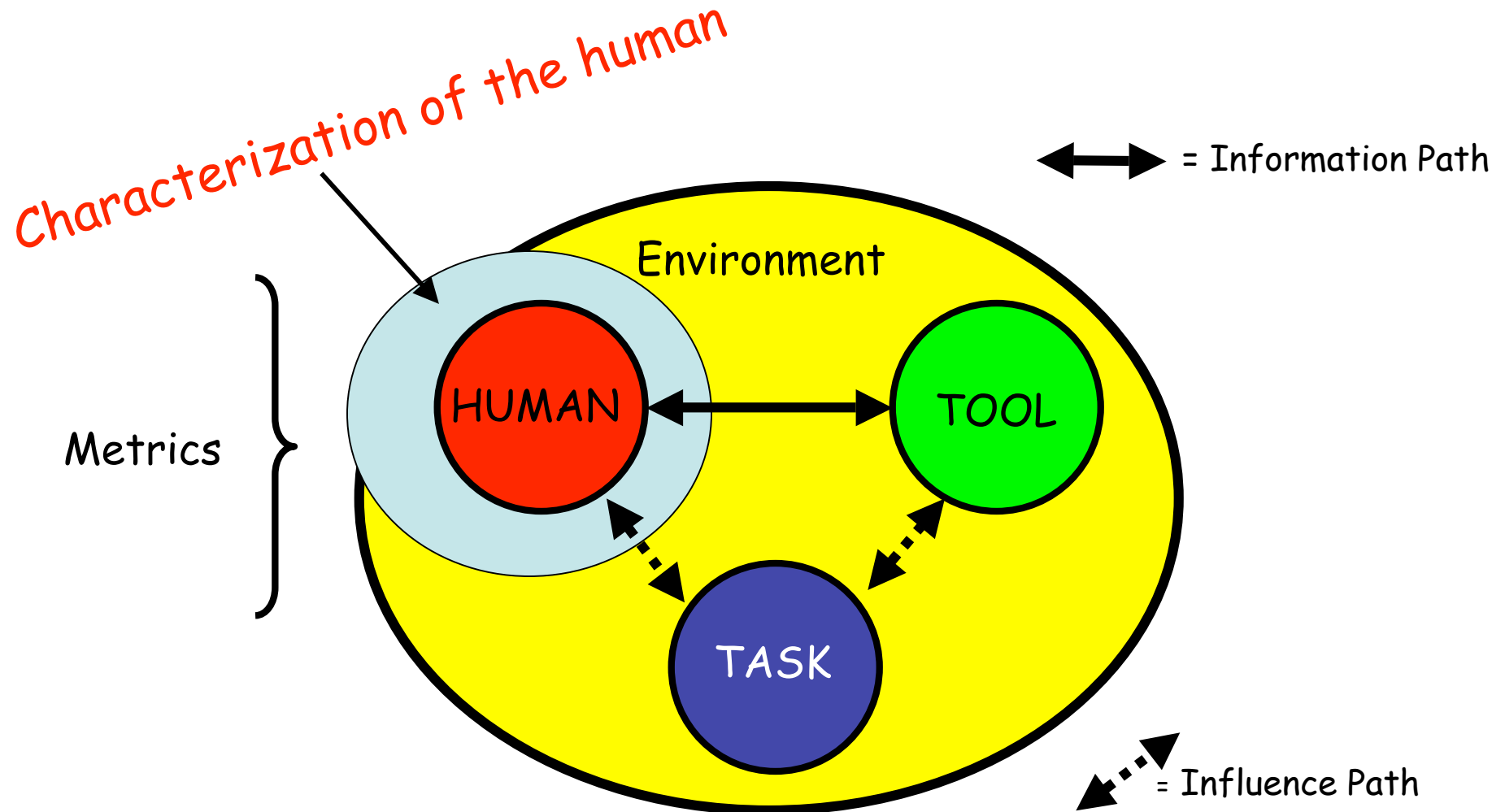
Agenda Class #6

- Turn in Phase 1: Project Prospectus
- Characterizing the user - (9.1)

User Interface Design Considerations



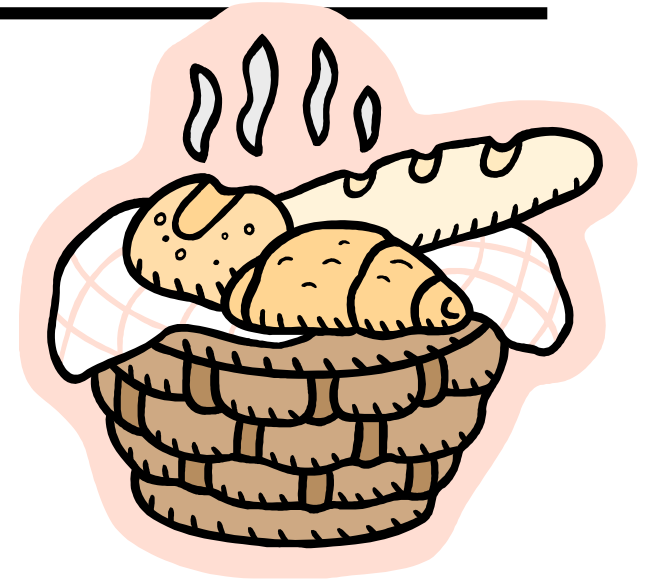
User Interface Design Considerations



Characterizing the Human: input/output ports

Module 9.1 (Part 1)

At least 6 senses (inputs)



Proprioceptive cues

Sense of
-position
-movement
-force



All least ?? outputs

- Presence = mass, temperature,
- Mechanical vibrations sound
 - Speech, utterances
- Motor movement
 - Eyes, head, hands, fingers, toes, body
- Chemical
 - Pheromones (see definition)
- Other signals
 - Electrical
 - electromagnetic

Definition of 'pheromone'

pher·o·mone n

a chemical compound, produced and secreted by an animal, that influences the behavior and development of other members of the same species

Encarta® World English Dictionary © 1999 Microsoft Corporation. All rights reserved.

people are three dimensional...

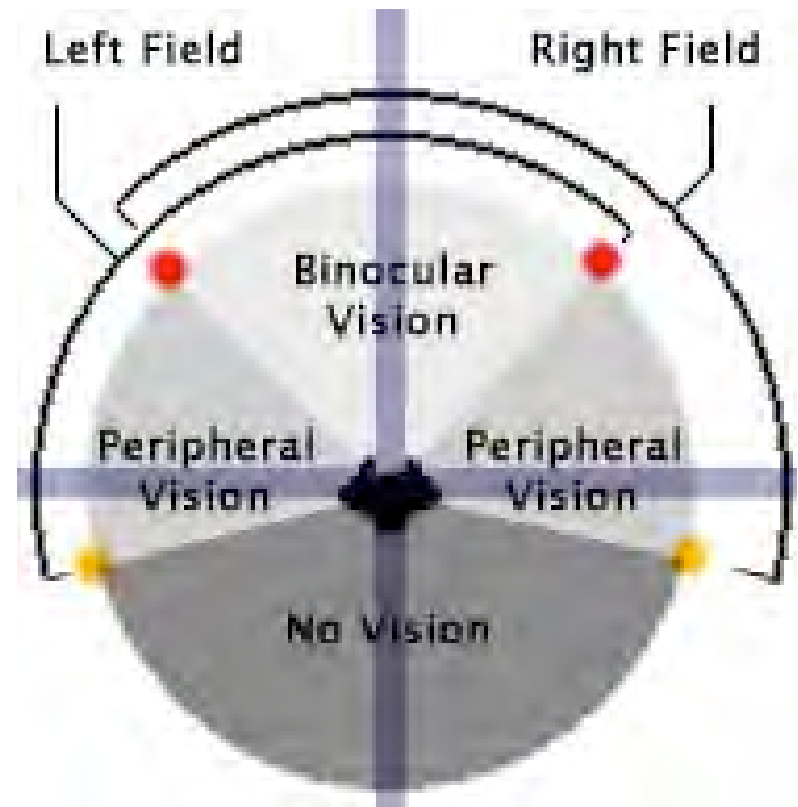
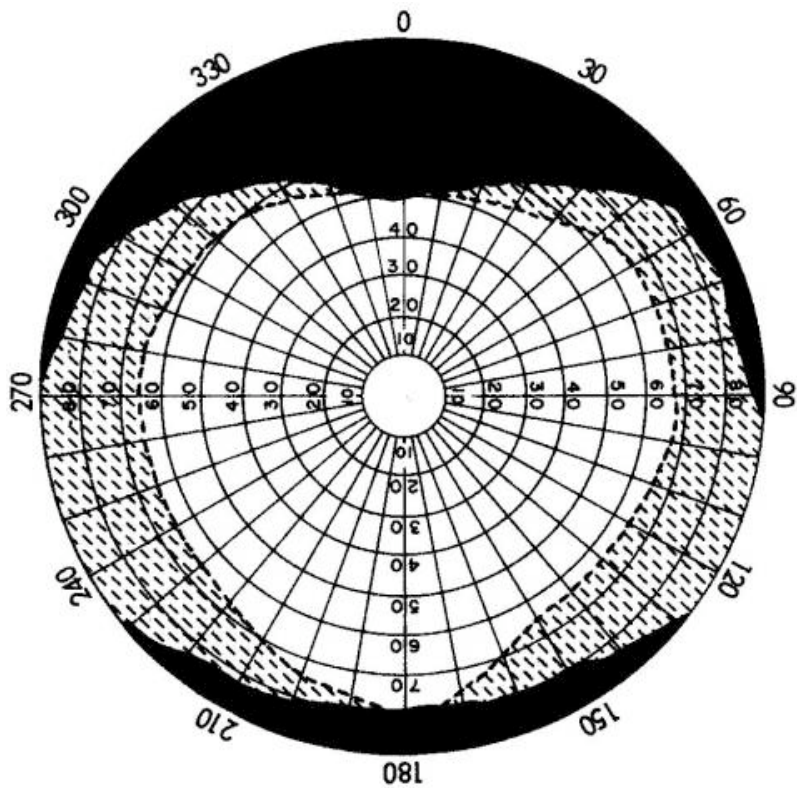


Humans have four eyes!

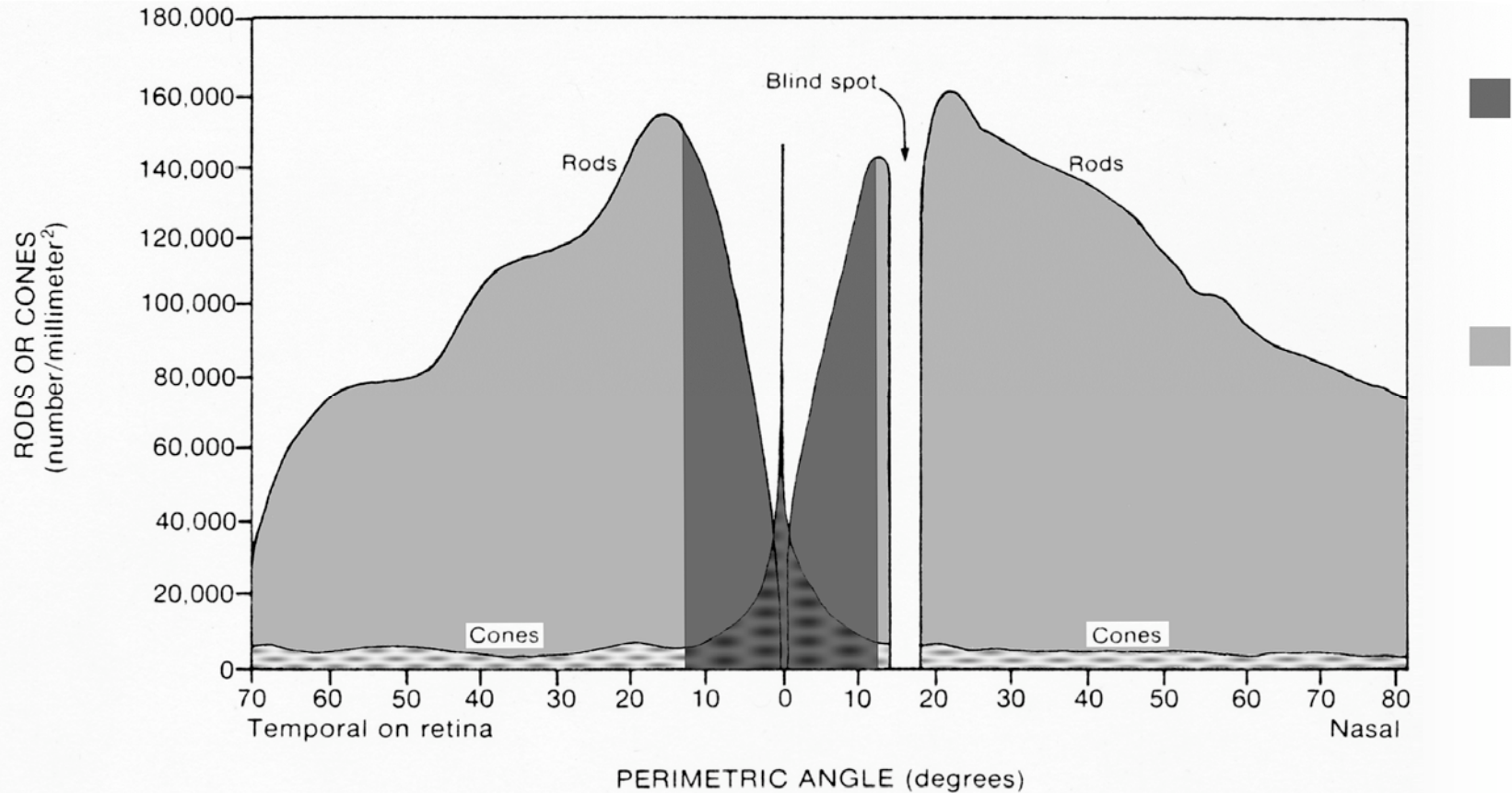
Two eyeballs



Field of vision

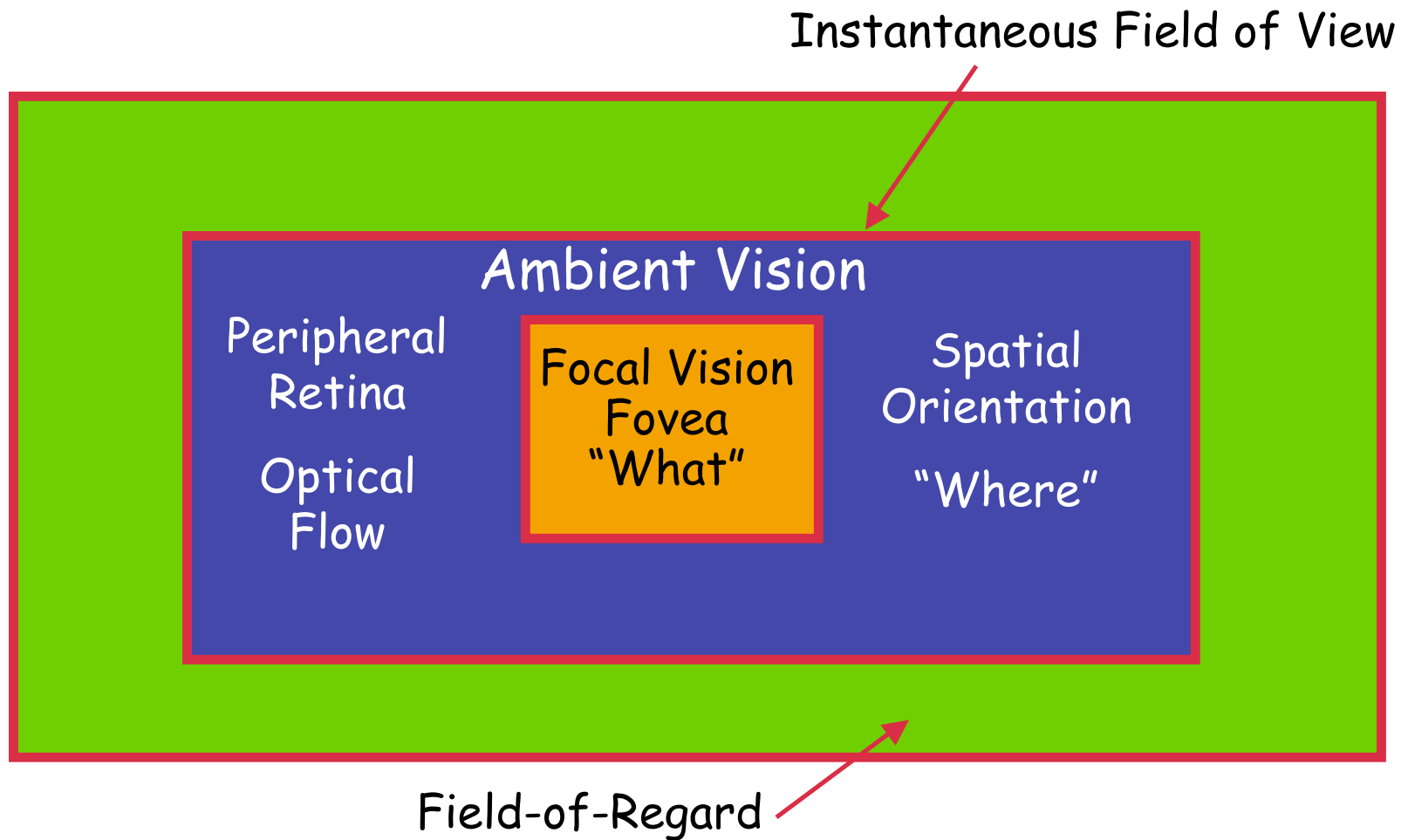


Distribution of receptors in eye



Rod and cone densities as a function of eccentricity along the horizontal meridian.

Two vision systems



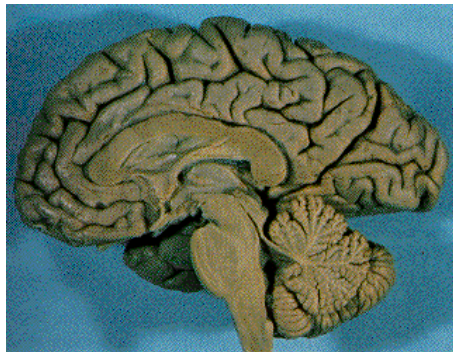
Humans Have Two Brains

- **L Mode**

- Analytic/Logical
- Linear/Step by Step
- Temporal
- Handles Discrete Info
- Puts Things in Categories
- Rule Based

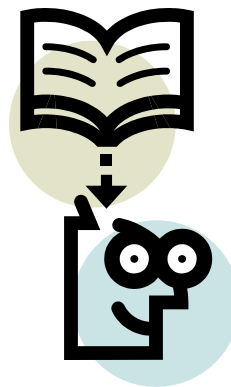
- **R Mode**

- Spatially-Oriented
- Analogic
- Synthetic
- Non-Temporal
- Sees Relationships
- Intuitive
- Wholistic



Build mental models

- Short term & long term memory
- Spatial memory
- State awareness
- Spatial awareness
- Situation awareness



people are different...



How humans work...

- Six senses
- Three dimensional
- two visual systems
- Two brains
- multiple modalities
- build models, create expectations
- Adapt
- Are different
- dislike pain

More about humans

- Emotional
- Can keep about 5-7 things in head at one time
- Are not patient with machines
- Dislike reading manuals/instructions
- Must 'impedance match' to get to the brain!

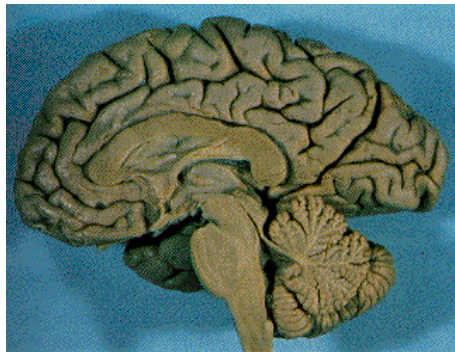
Humans Have ~~Two~~ Brains *Four*

- **L Mode**

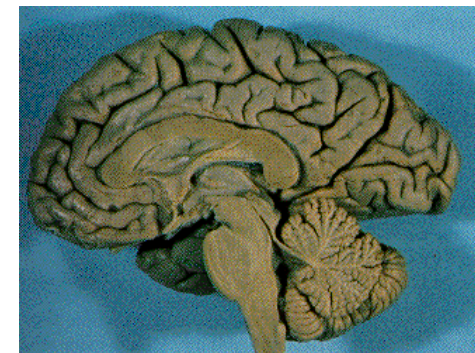
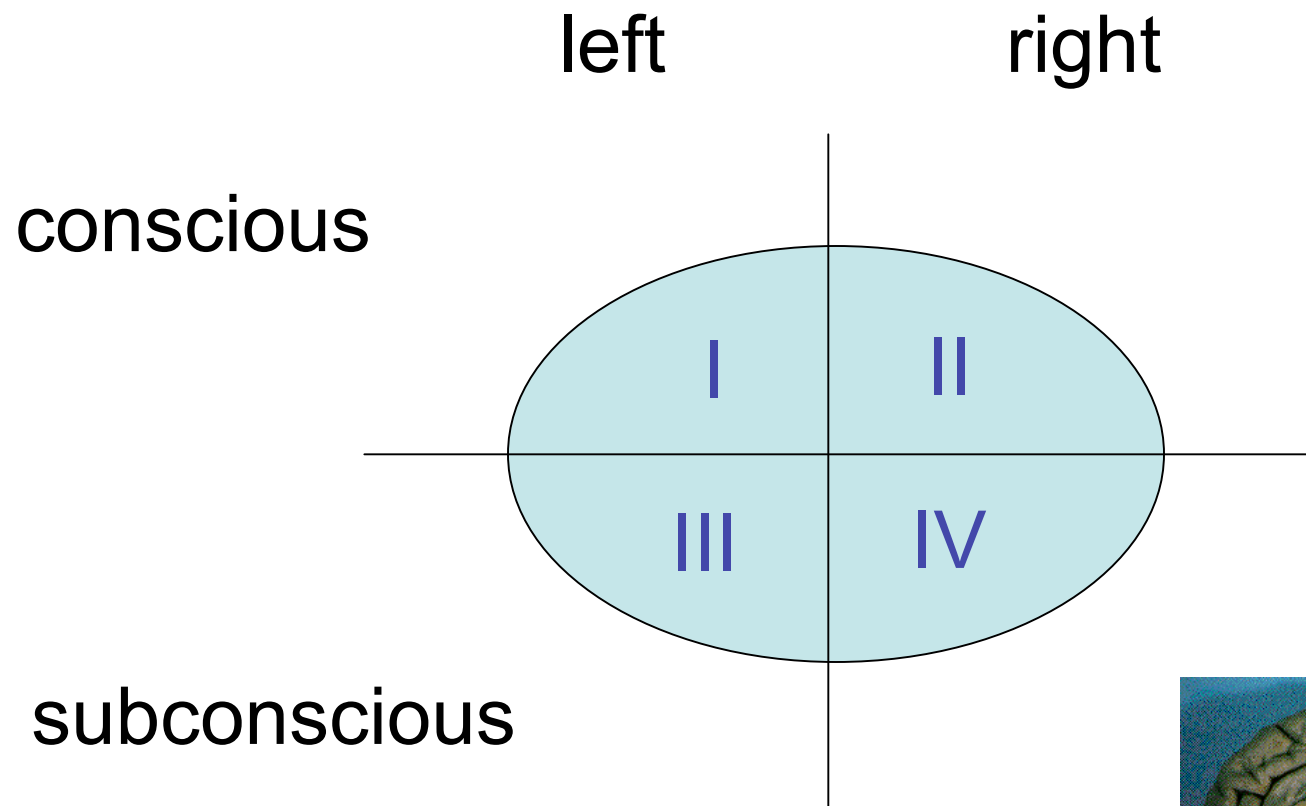
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- **R Mode**

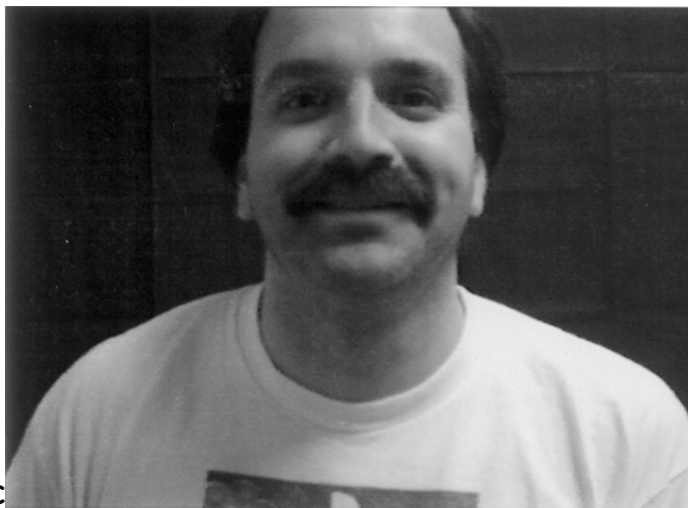
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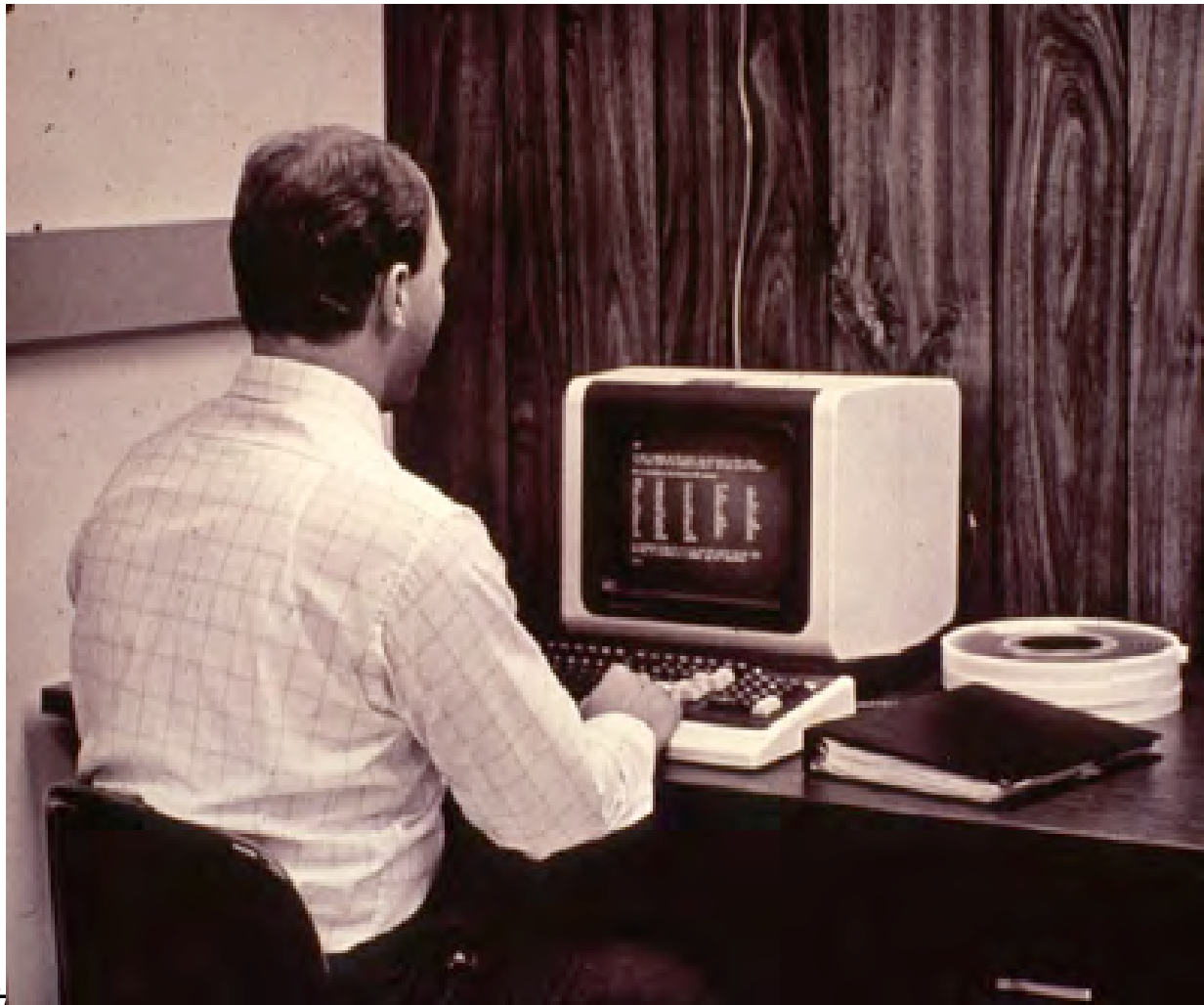
Whole brain interfaces...



Emotional feedback...



So what is wrong with this interface?



Current interface problems

- Don't match input port to brain
- Not 3D
- require highly coded input
- not intuitive
- outside looking in
- cannot interact with the real world

=low bandwidth to brain

Some really bad interfaces!

Really bad interfaces!

- Think of some really bad interfaces...

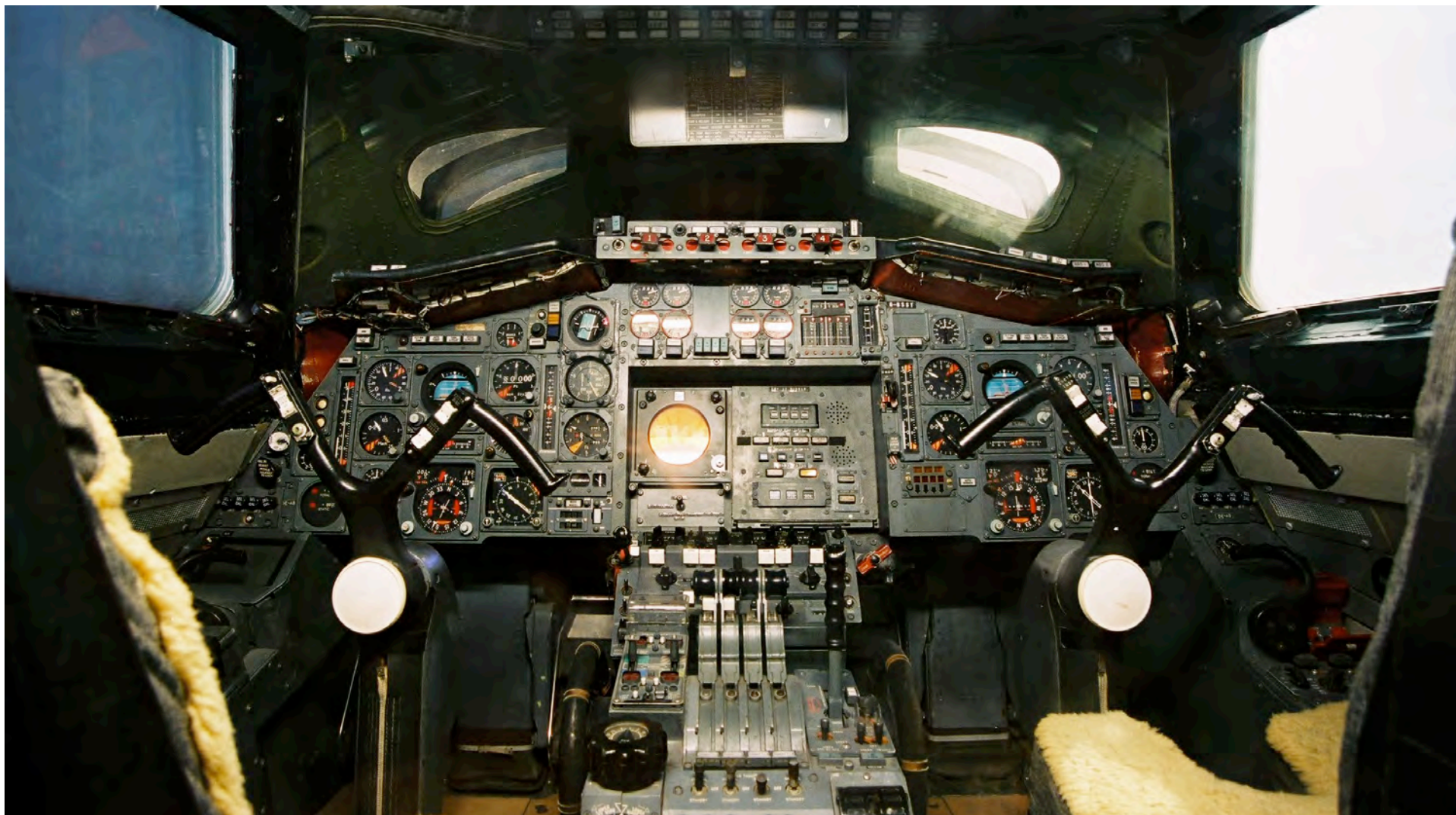
Concorde in-flight



Concorde Landing



Concorde Cockpit



F-15



IE/TC455 class #6



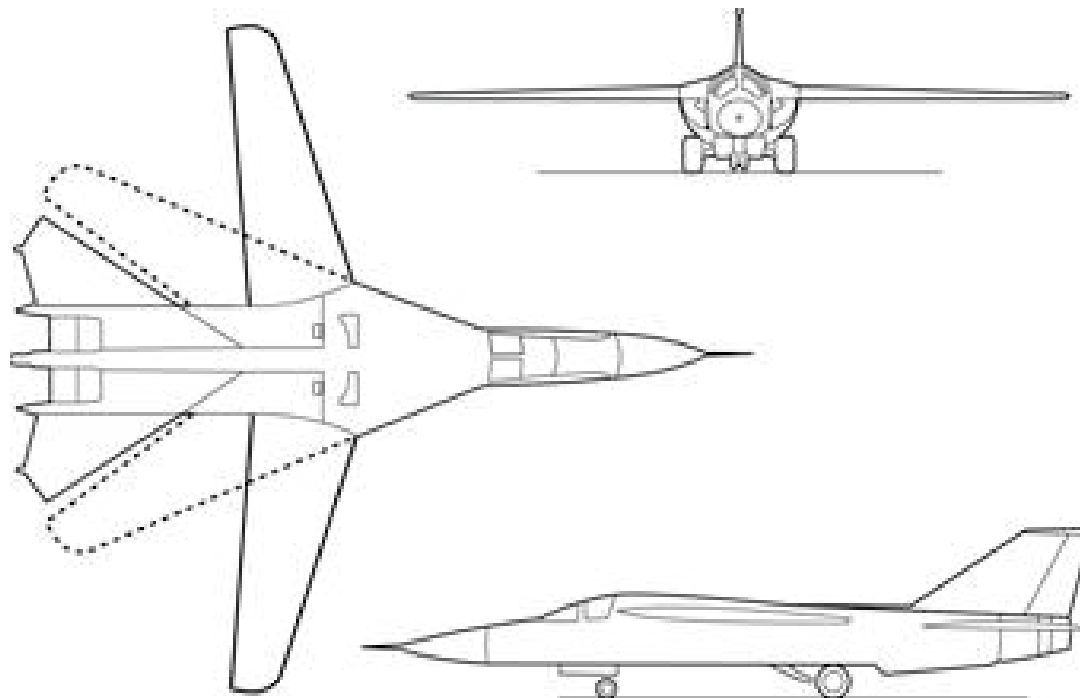
Old F-15 Cockpit (~1983)



New F-15 Cockpit (today)



F-111 plan form



F-111 (subsonic flight)



F-111 Cockpit



F-111 (supersonic flight)



Set Phasers on Stun

Your really bad interfaces?

- Discuss next few classes

Assignments for Class #7

- Individuals
 - Module review - 5.2
 - Arcade projects
 - Do some literature research too
 - Due Class #8- (Friday 12 Oct)
- Groups
 - Phase 2: Problem Characterization & Background Review (due on Class #10-Wed. 15 Oct)