

## Higher Level Objects

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## User Interface Management Systems (UIMS)

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- DBMS analogy
- Out of favor

## Easiest Task: Presentation

- UI Builders (Layout Editors)

## Building User Interfaces by Direct Manipulation (Luca Cardelli)

- Domain: dialog boxes
- Position and size handled well

## Stretching: Attachment Points

- One for each edge of interactor BBox
  - layout task => size and position of BBoxes

## Stretching Rules

- 1) attachment points move prop to dialog stretch
- 2) attachment points maintain a fixed distance from interactor edge

## Opus (Hudson and Mohamed)

- More general visual notation for layout
  - Constraint-based

## Four Basic Notation Constructs

- Frames
- Constraints
- Reference lines
- Interactor objects

## Layout

- Same as before
  - layout task => size and position of BBoxes

## Constraints

- Represented by arrows

## Frames



## Reference Lines



- Analogy: ref lines used by draftsmen

Simple, yet powerful

A horizontal yellow brushstroke underline is positioned below the text "Simple, yet powerful". It has a textured, hand-painted appearance with varying shades of yellow and some darker spots, extending across the width of the text.