Introduction to Function Points

By: Carlos Colon Riollano, MBA, PMP, CPM, MSPC

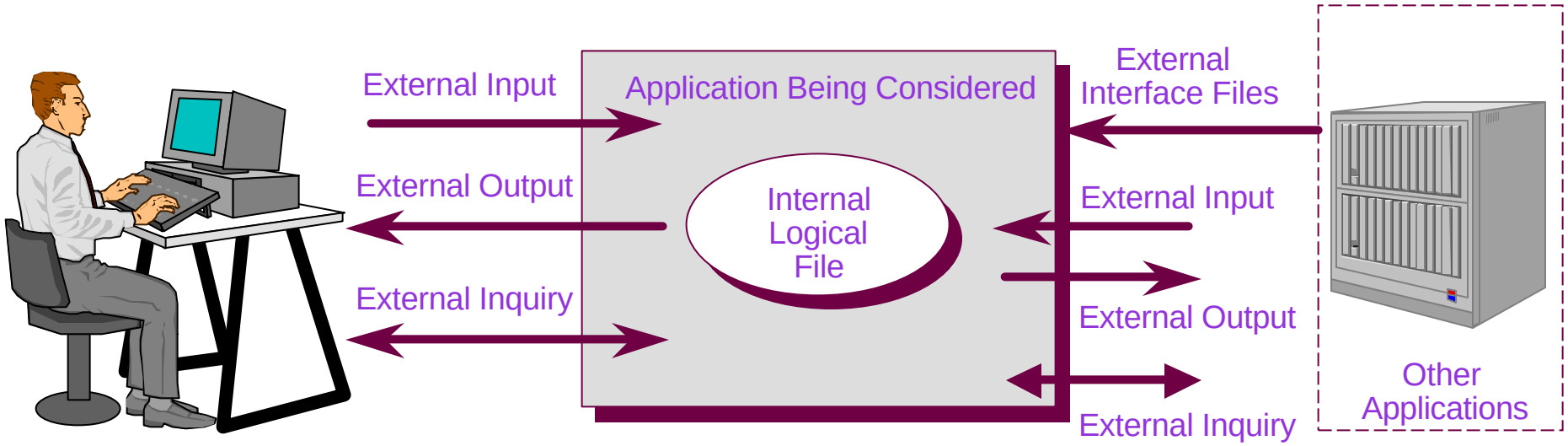
Agenda

- Introduction
- What is a a function point?
- Objectives of Function Point Analysis
- Brief Function Points History
- Questions

Function Points are a Unit of Measure

- FP's are a unit measure for software much like an hour is to measuring time, inches to measuring distance and Fahrenheit to measuring temperature.
- A UOM is important to understanding and communicating such metrics as Average Costs, Average Time and so forth.
- For example understating the cost per square foot to build a house, help a buyer to compare one house to another, also helps the builder to understand the cost and predicts future costs.

Function Points are a Unit of Measure



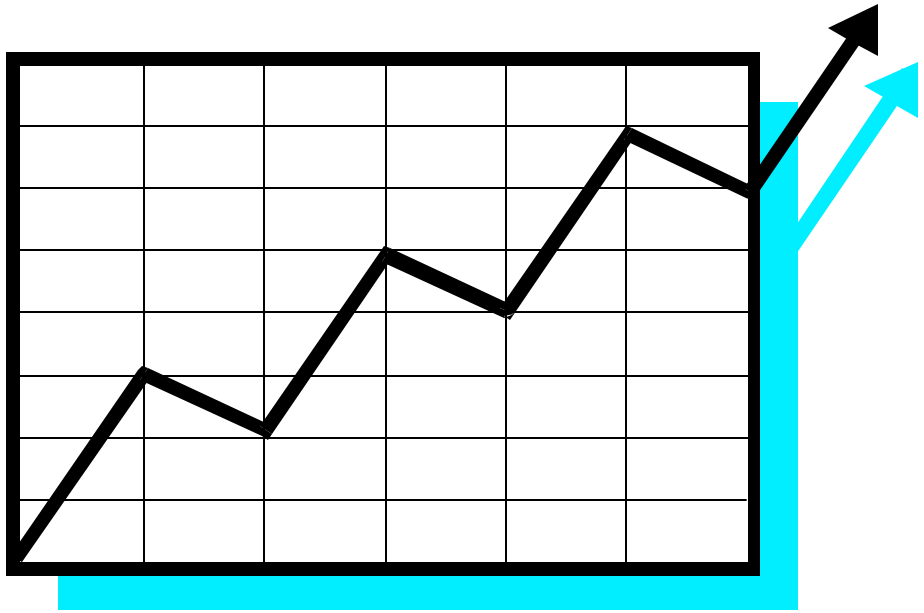
- Functionality as viewed from the user's perspective

Objectives of Function Point Analysis

- Measures software by quantifying the functionality requested by and provided to the customer based primarily on logical design
- Measures software development and maintenance independently of technology used for implementation
- Measures software development and maintenance consistently across all projects and organizations

Why Use Function Points

- To manage your software

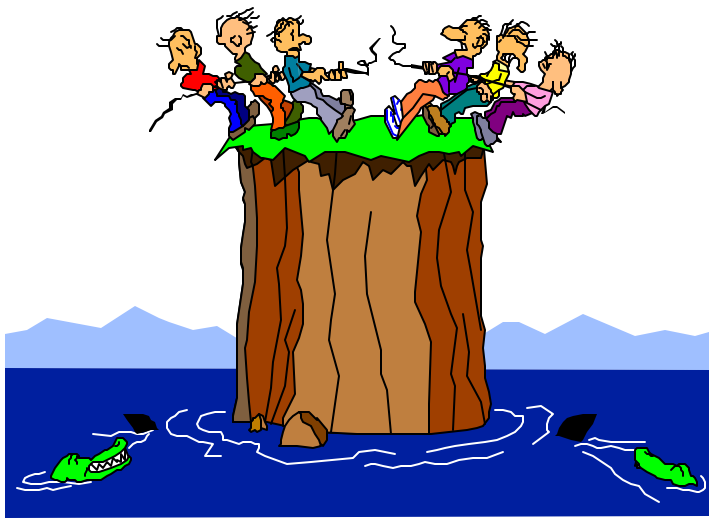


Software Development Challenges

- Size of Requirements
- Changes to Requirements
- Estimation Based on Requirements
- Measuring and Improving Productivity and Quality

Changes to Requirements

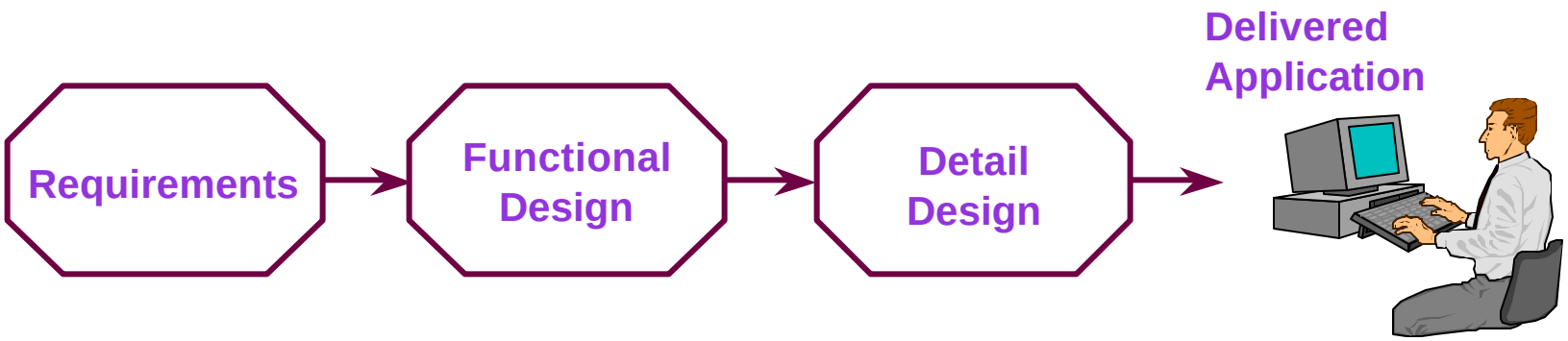
- Changes to Requirements
  - Change Inevitable
  - Trade-offs
  - Customer Definition of Quality
  - Size



Size of Requirements

- Requirements
  - Complete
  - Business Terms
  - Mutual Understanding
  - Document Assumptions
  - Size

Changes to Requirements



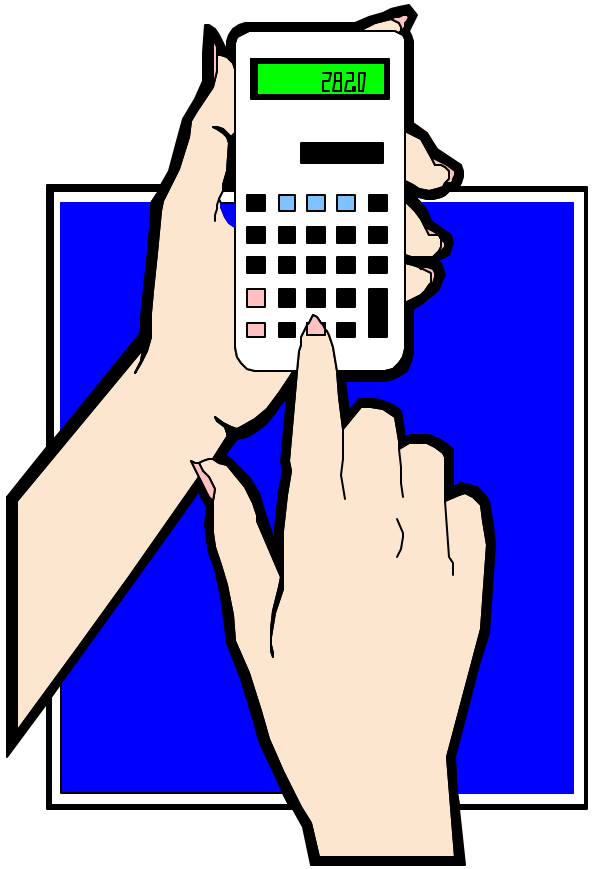
100 FPs	120 FPs	130 FPs	135 FPs
	• State code input screen changed (3 FPs) • Interface to N&A file added (10 FPs) • N&A inquiry and state code inquiry added (7 FPs)	• New regulatory table added (10 FPs)	• Summary report added (5 FPs)

Impact

Effort	+ 1 month	+ .5 month	+ .25 month
Schedule	+ 2 weeks	+ 1 week	+ 2.5 days
Cost	+ $5 K	+ $2.5 K	+ $1.25 K

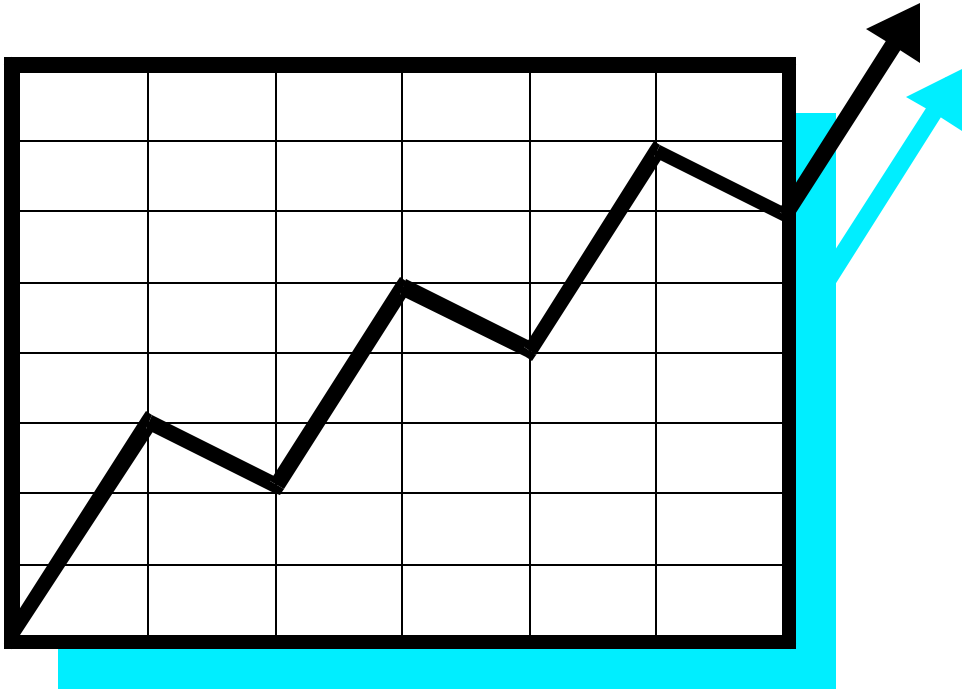
Estimation Based on Requirements

- Estimation Based on Requirements
  - Multiple Models
  - Weighted Inputs:
    - Language
    - Skills
    - Methodology
    - Risk Factors
    - Size
  - Historical Base



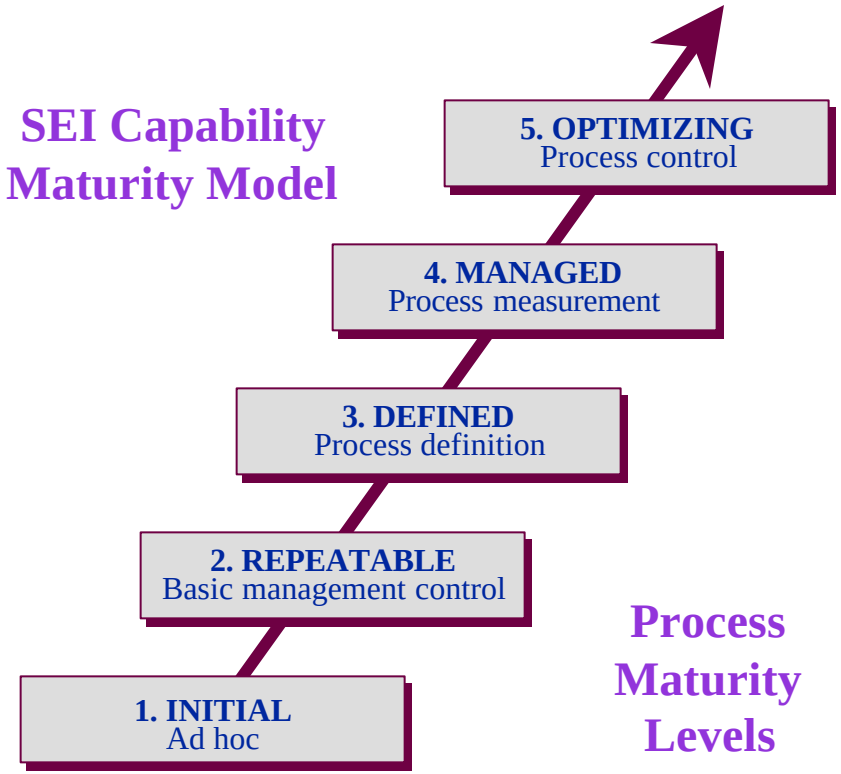
Why Use Function Points

- To manage your Organization



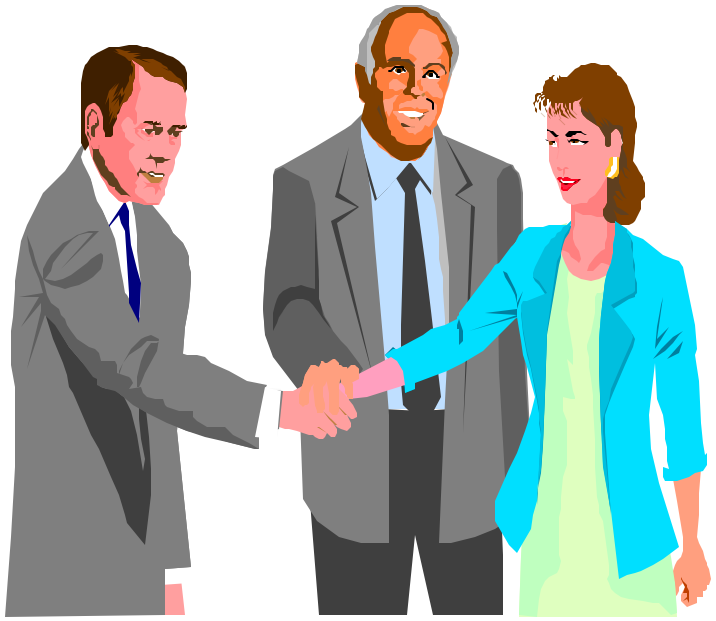
Function Points and the CMM

- Function Points are the metric of choice for many of the activities required in the SEI CMM Level 2
- With the next release of the CMM, metrics becomes a Key Process Area in its own right



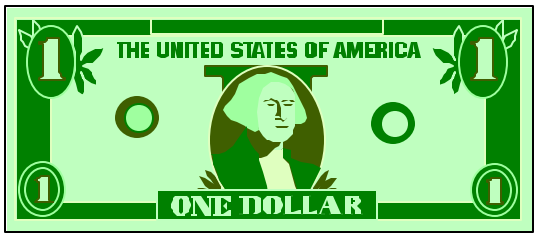
Improving Customer Relations

- Predictable Time scales
- Predictable Costs
- Predictable Functionality



Organizational Improvement

- Process Measurement
- Project Management Metrics
  - Estimates
  - Productivity
  - Defect Densities
  - etc.
- Benchmarking



Why Use Function Points

- Function Points vs. Lines of Code

Function Points not Lines of Code

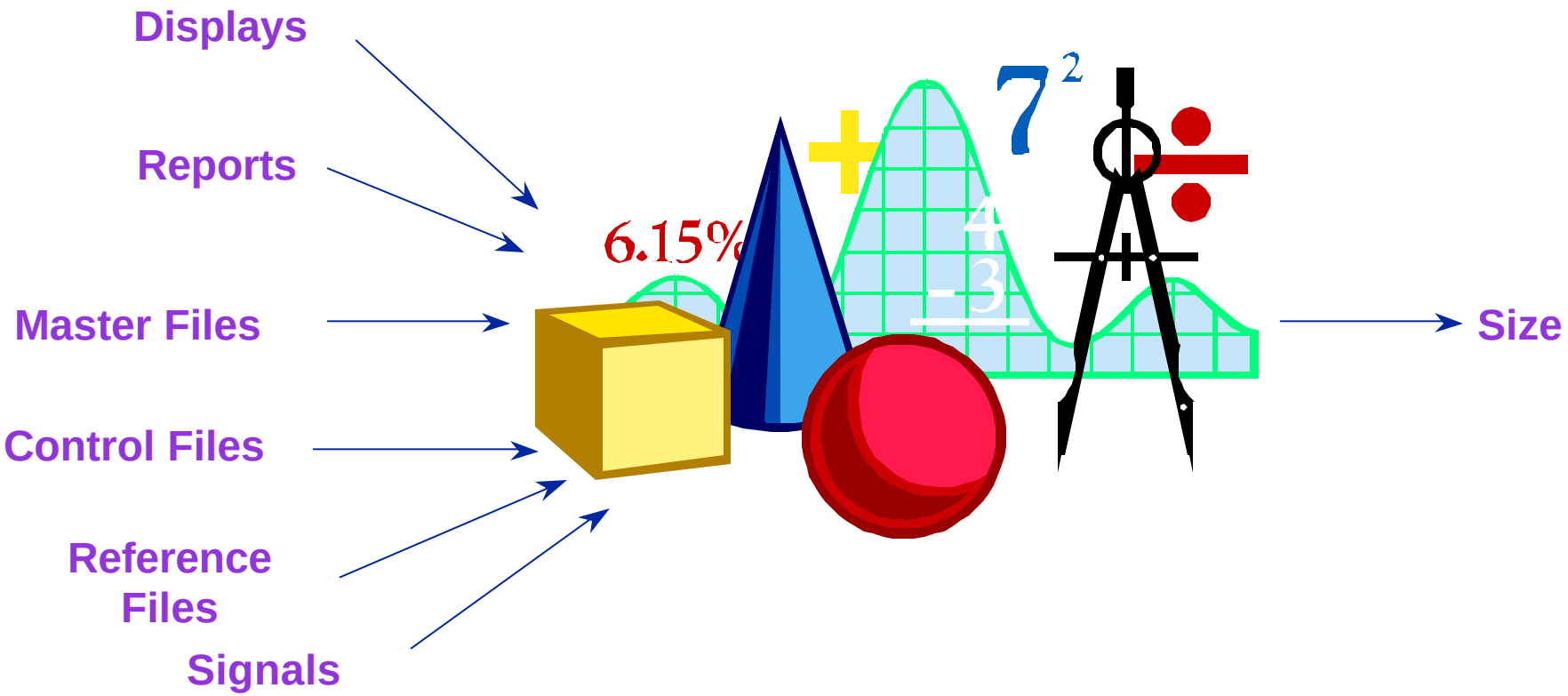
- Technology and platform independence
- Available from early requirements phase
- Consistent and objective unit of measure throughout the life cycle
- Objectively defines software application from the customer perspective
- Objectively defines a series of software applications from the customer’s, not the technician’s perspective
- Is expressed in terms that users can readily understand about their software

What is Wrong with Lines of Code?

- There is no standard for a line of code
- Lines of Code measure components not completed products
  - Don't measure the panels produced; measure the number of cars assembled
- Measuring lines of code
  - Rewards profligate design
  - Penalizes tight design
- Positively misleading?

How to Count Function Points

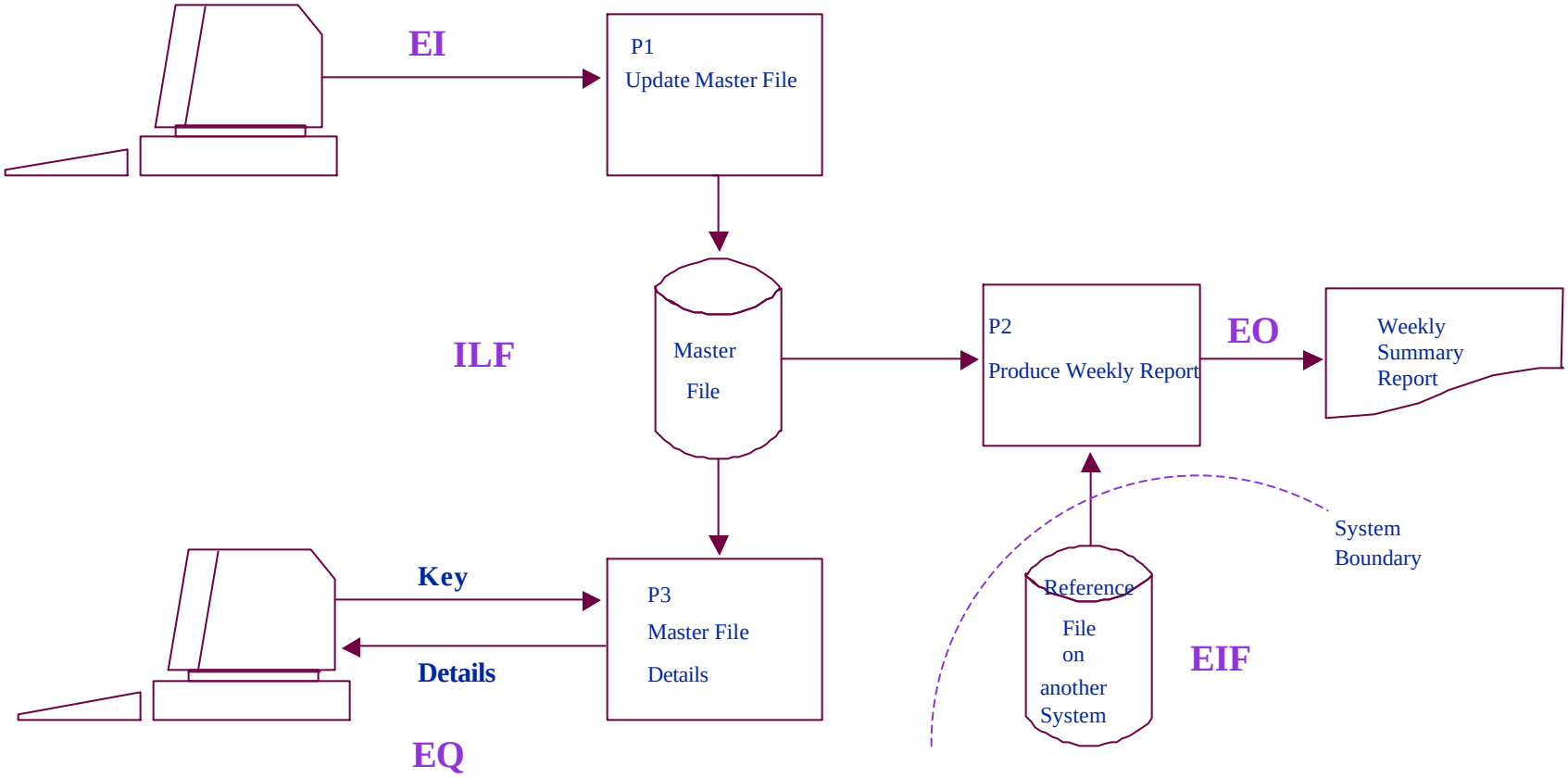
How to Count Function Points



Steps in FP Counting

- Determine Type of Count
- Identify Counting Scope and Application Boundary
- Count Data Functions
- Count Transactional Functions
- Determine Unadjusted Function Point Count
- Determine Value Adjustment Factor
- Calculate Adjusted Function Point Count

FP Overview: What Is Counted



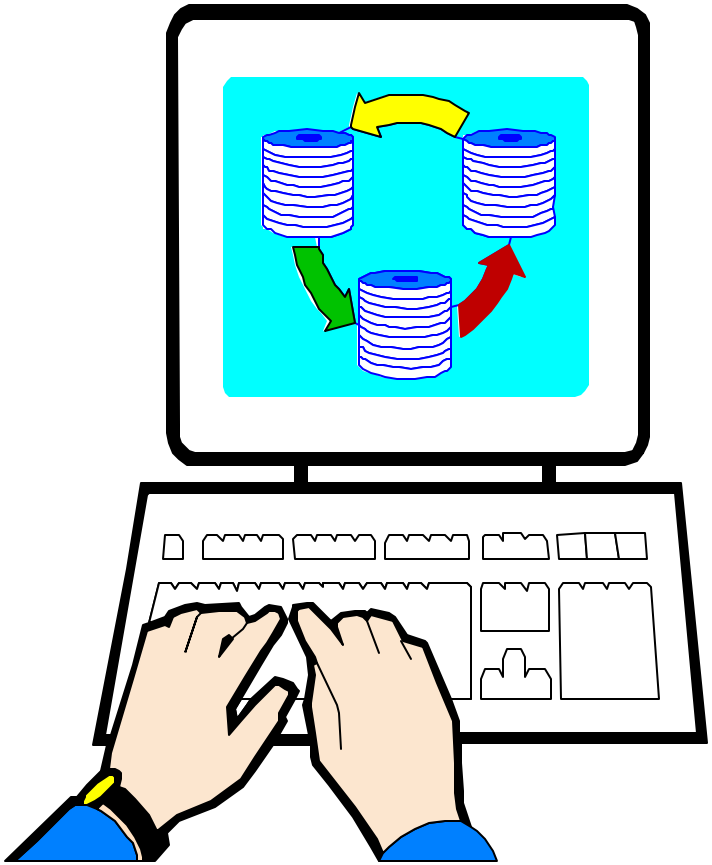
Data Storage

- Internal Logical File (ILF)

  Logical group of data maintained by the application (e.g., Employee file)

- External Interface File (EIF)

  Logical group of data referenced but not maintained (e.g., Global state table)



Transactions

- External Input (EI)

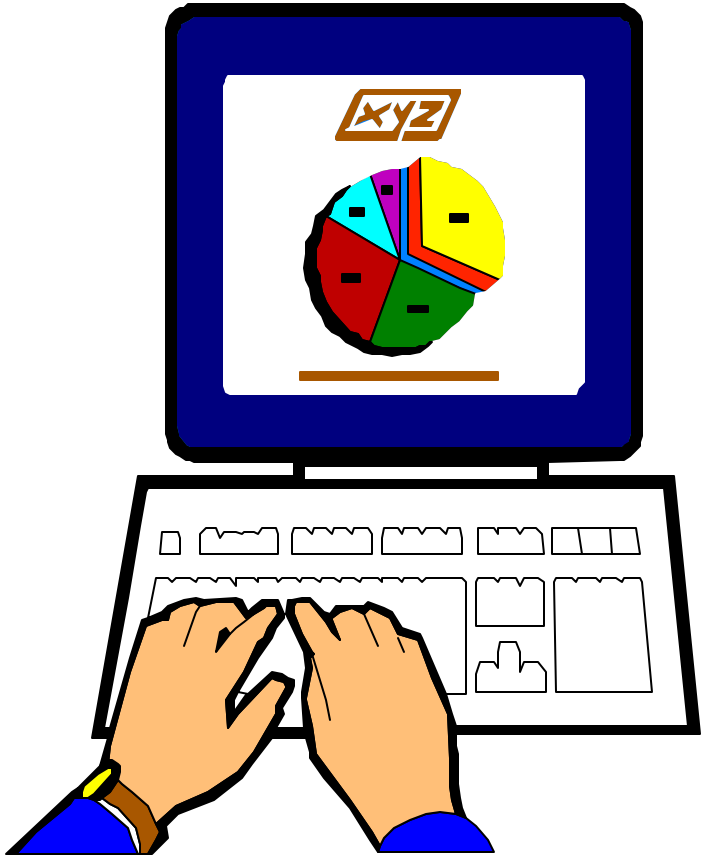
  Maintains ILF or passes control data into the application

- External Output (EO)

  Formatted data sent out of application with added value (e.g., calculated totals)

- External Query (EQ)

  Formatted data sent out of application without added value

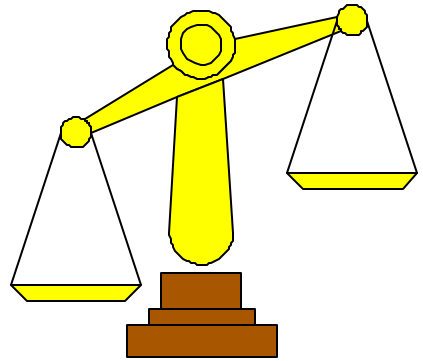


Functional Size (Unadjusted Function Size)

Function Type	Low	Average	High
EI	x 3	x 4	x 6
EO	x 4	x 5	x 7
EQ	x 3	x 4	x 6
ILF	x 7	x 10	x 15
EIF	x 5	x 7	x 10

Value Adjustment Factor

- Based on 14 General System Characteristics (User Business Constraints Independent of Technology)
  - Examples: data communications, response times, end user efficiency, multiple sites and flexibility



- Adjusts FP count by up to + / - 35%

IFPUG History

History - Early Days

1979	Function Points introduced by Allan Albrecht
1984	First formal Function Point Guidelines
1986	IFPUG elects first Board of Directors
1990	Function Point as Assets Manual
1991	Certification for training materials IFPUG Hotline established

History - Modern

1994 CPM release 4.0
Participation in International Software Benchmarking Standards Group (ISBSG)

1995 Guidelines to Software Measurement
IFPUG Home Page Introduced

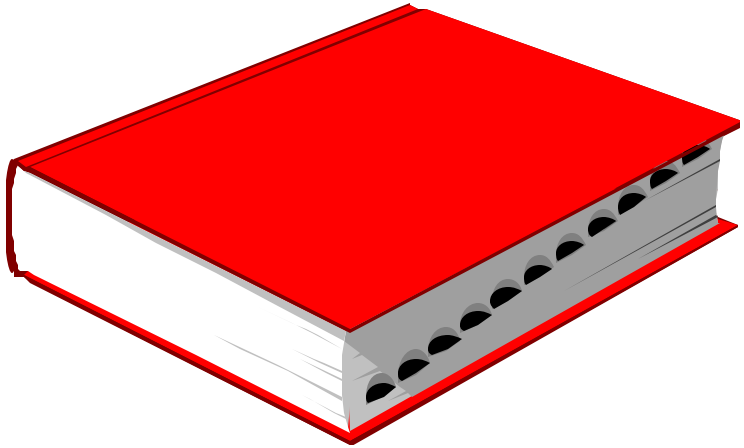
1997 10th Anniversary Celebration!

1999 CPM release 4.1

IFPUG Structure

Counting Practices

- Publish Counting Practices Manual
- Update Counting Practices Manual
- Make Rulings on areas of Ambiguity



Certification

- Tests for Conformance to Counting Practices Manual
  - Counters
  - Training courses
  - Software support tools

IFPUG Benefits

- Free copies of IFPUG standards manuals
- Case Studies at member discounted rates
- Member directory
- Publications *MetricViews*, *Metrics Source*
- IFPUG E-Mail List Serve & Private Home Page
- Reduced rates for conference & workshops
- Ability to participate on Committees
- Networking, Professional Development

How May We Help You?

- Questions????
- Comments!!!
- Suggestions!?!?!?