



New Views – FFP Concepts

***COSMIC-FFP - ISO 19761
The 2nd generation of
functional size measurement***

Dr. Alain Abran

***NASSCOM QUALITY SUMMIT
Bangalore (India), September 13, 2004***



List of topics

- Introduction:
 - Software Measurement
- Functional Size: Past & Present
- COSMIC-FFP
- Competitive Advantages
- Conclusion



Measurement

Measurement is a technology:

- **Measurement Designs =**
 - Technical Knowledge
 - **Consensus on related concepts & conventions**
 - International Standards & Metrology
- **Measurement Procedures = Know How**
- **Tools = Measuring instruments**
 - including software tools

...and technologies emerge, evolve, mature...

- they get into mainstream if it they provide enough benefits to meet the market needs



Introduction

Software Engineering:

- *“The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software;*
- *That is: the application of engineering to software”.*

Institute of Electrical and Electronics Engineering - IEEE



Introduction

Can you imagine sciences, business or engineering without measurements?

Is measurement **mainstream** in the management of software projects?

- What is the status of functional size measurement?
- What about COSMIC-FFP, this new kid on the block?



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Functional Size

Functional Size Measurement = a **technology**

- It must evolve to meet market needs
 - Not a religion

'Function Point Analysis': + 25 years old

- Large name recognition in the market place but..
 - In MIS : at most **x.. %**
 - Elsewhere: ... next to 0%

What does it mean?

- ... **irrelevance ?**
- **or immaturity of:**
 - **Technology?**
 - **Industrial environment?**



Functional Size

Where is it going?

- In the mid-1990's, FPA was proposed for international standardization – ISO
 - While there was about +35 variants on the market!

What happened?

- ISO Agreement:
 - on benefits but.....
 - FPA was not recognized as **the** solution
- ISO developed criteria for acceptable solutions (1995-2002):
 - ISO 14143: Parts 1 to 5



Software Size

ISO 2002-2004

- Emergence of a 2nd generation to meet ISO criteria = **COSMIC-FFP – ISO 19761**
- Recognition of three 1st generation methods:
 - MKII
 - IFPUG
 - NESMA
- Integration of FSM standards within the ISO standards infrastructure – ISO 90003:
 - To ensure the technology fit
 - To market software measurement



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COSMIC-FFP

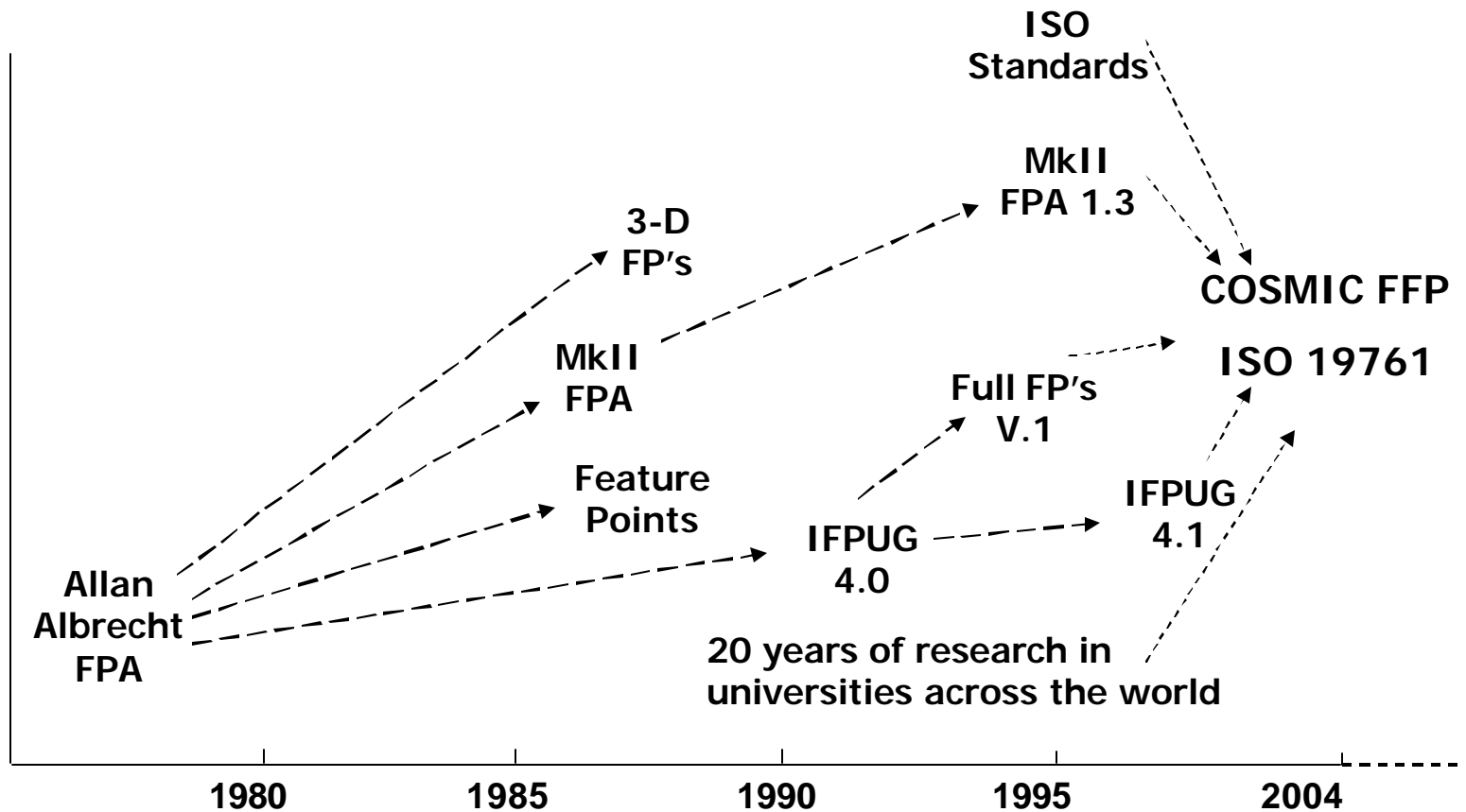
Design funded by industry to address business needs for sizing software:

- Real-time and embedded software
- Multi-layer software
- Compatible to MIS software
- Compatible with modern software design techniques
- Compliant to new ISO requirements
- Sound theoretical foundations



COSMIC-FFP: built and based on lessons learned

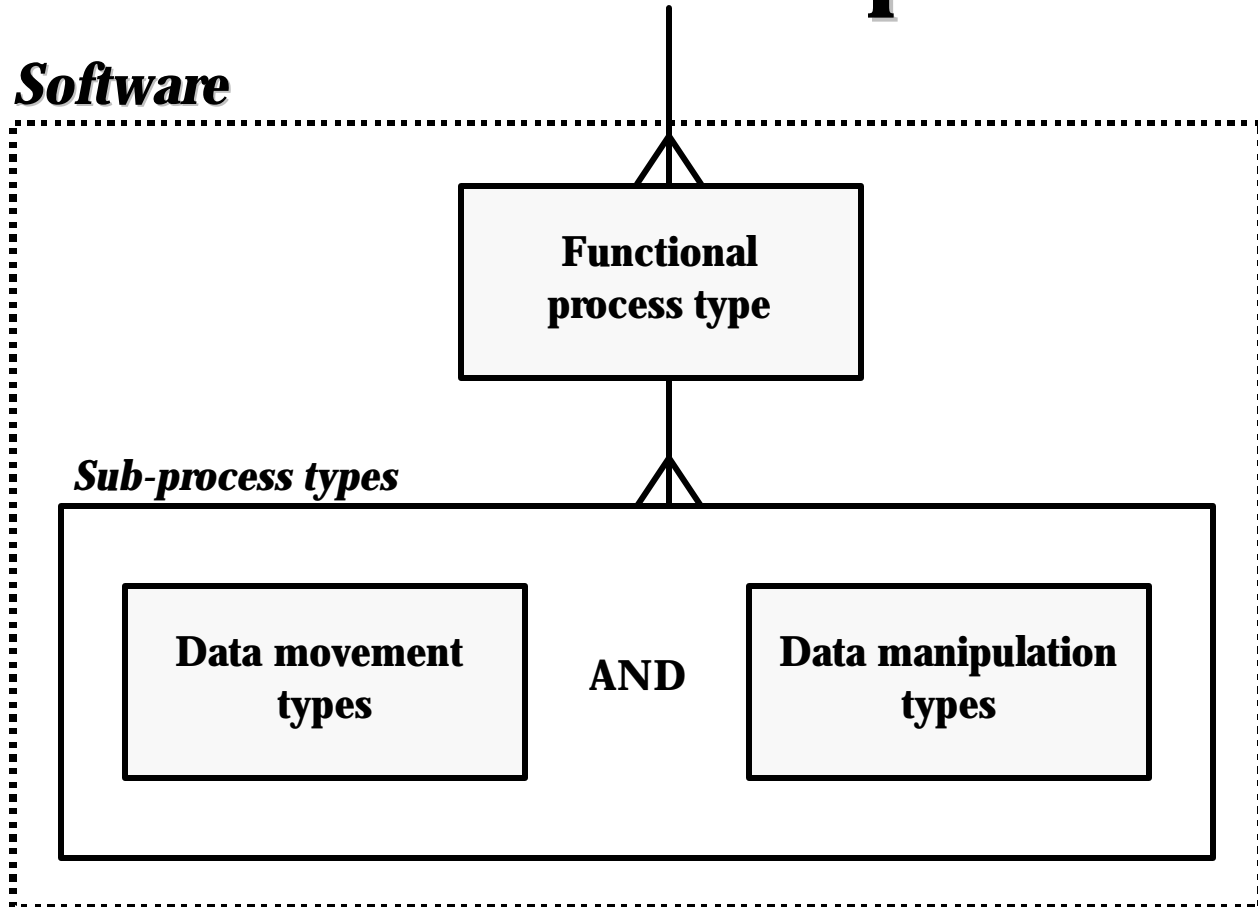
Context...





COSMIC model of software

Functional User Requirements

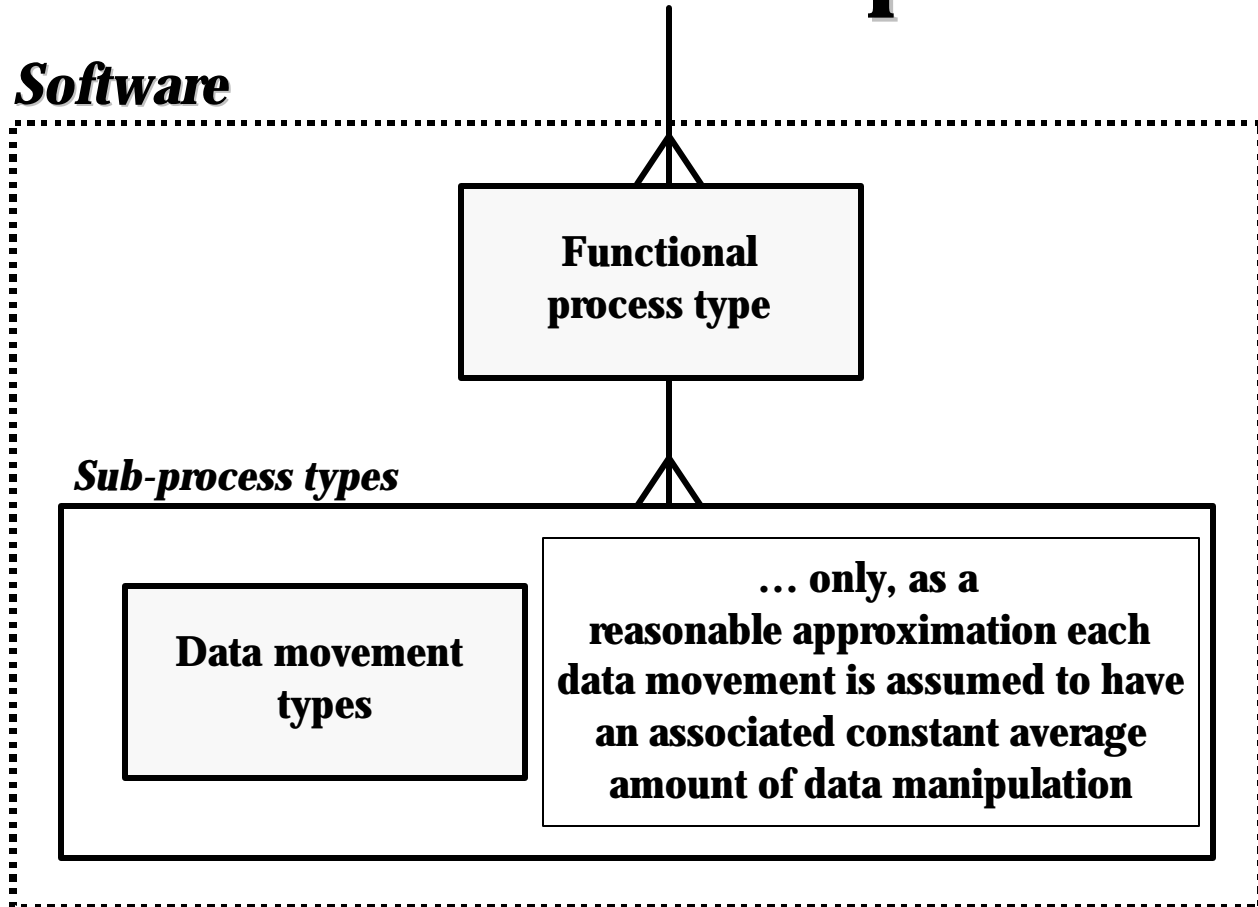


Functionality = Data movements and Data manipulations



COSMIC model of software size

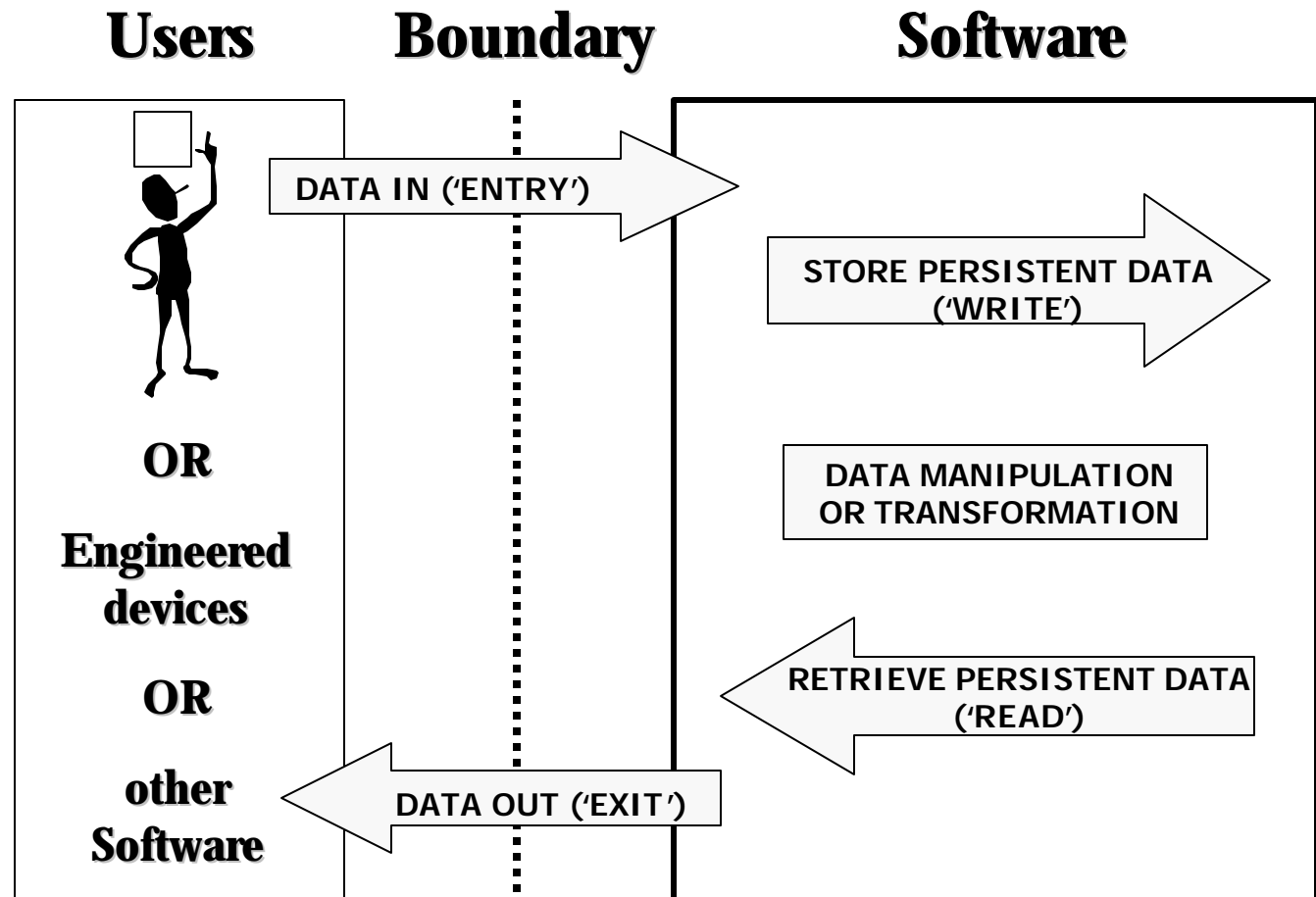
Functional User Requirements



Functionality = Data movements + some processing

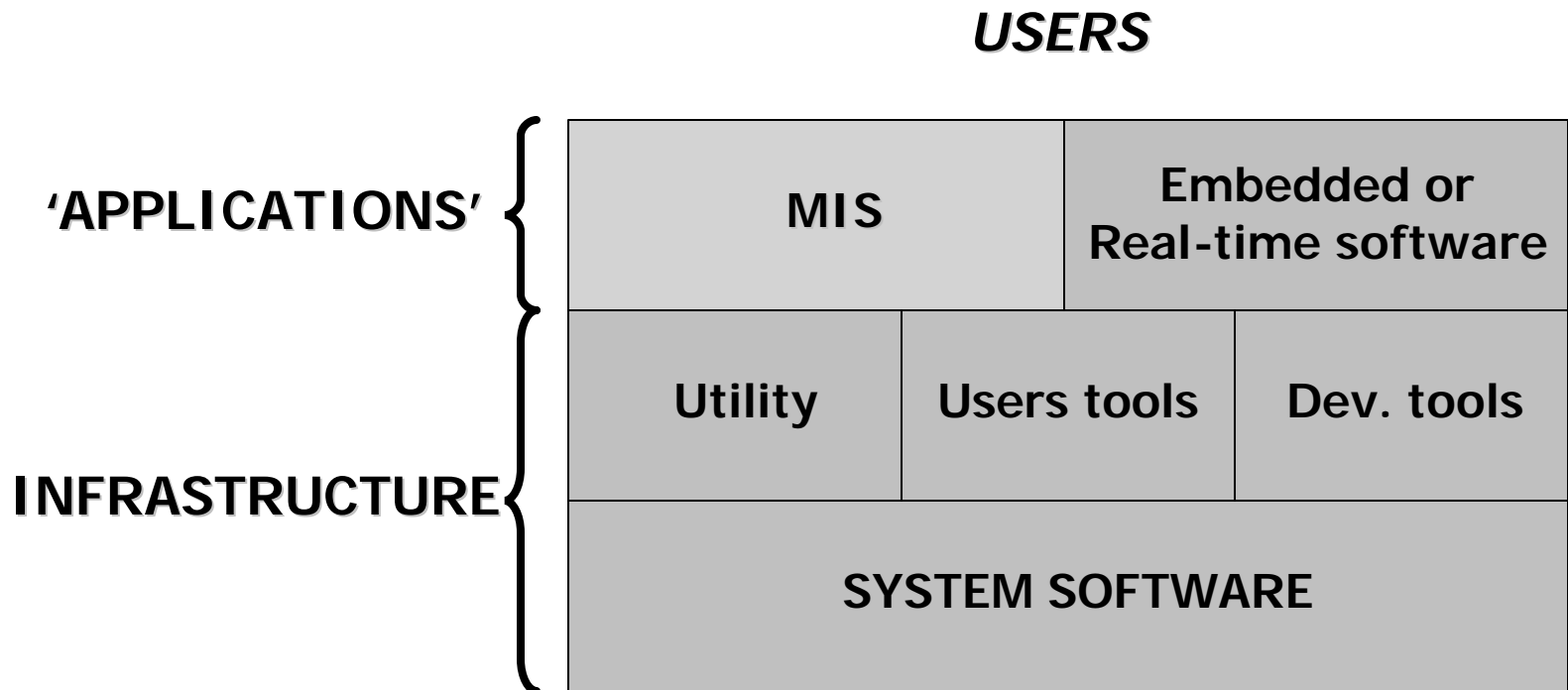


User view of software functional requirement components





Different kinds of software

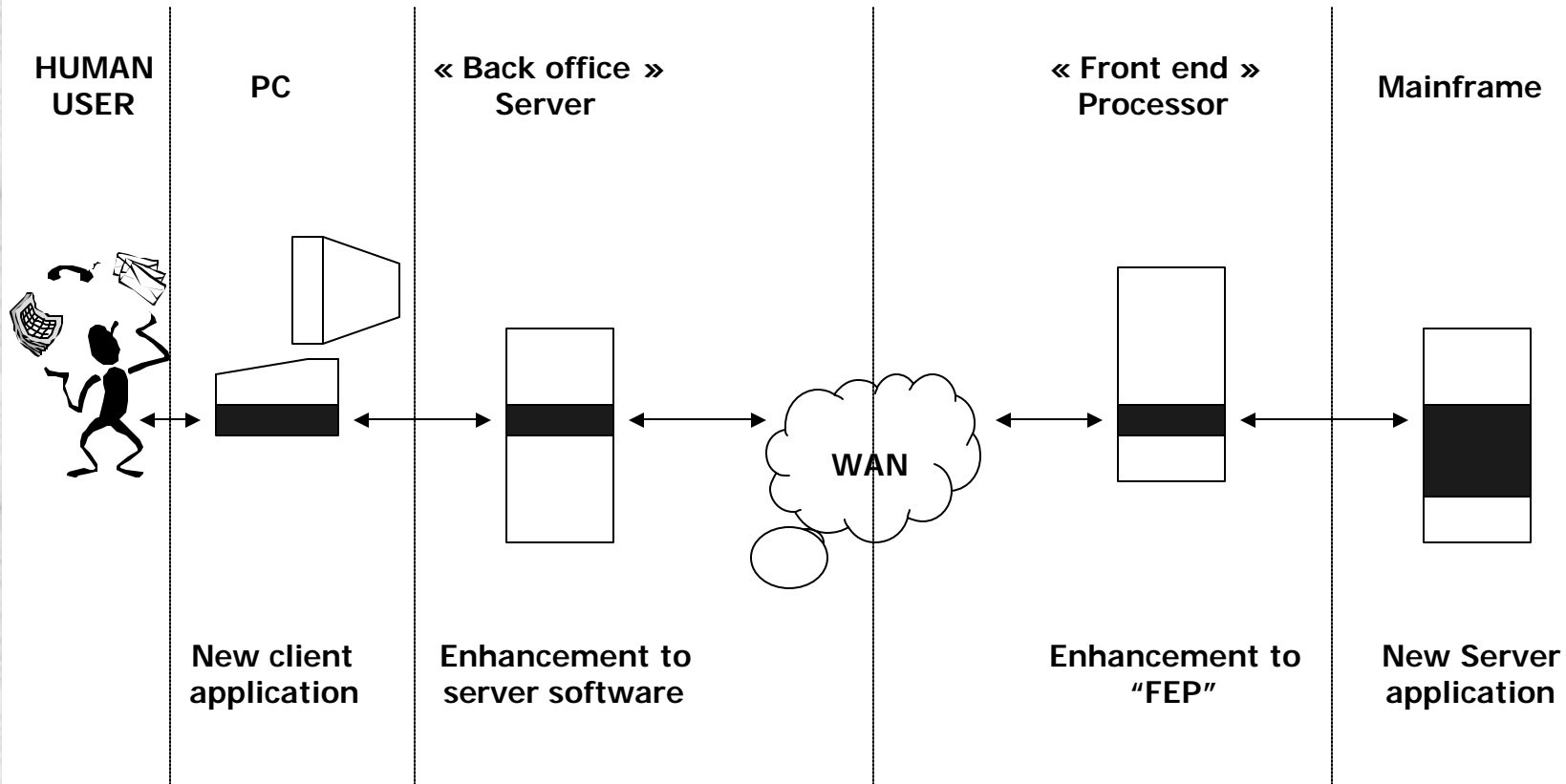


**'MIS' = Management Information Systems,
i.e. Business 'data-rich' software**



COSMIC and Software Layers

BOUNDARIES



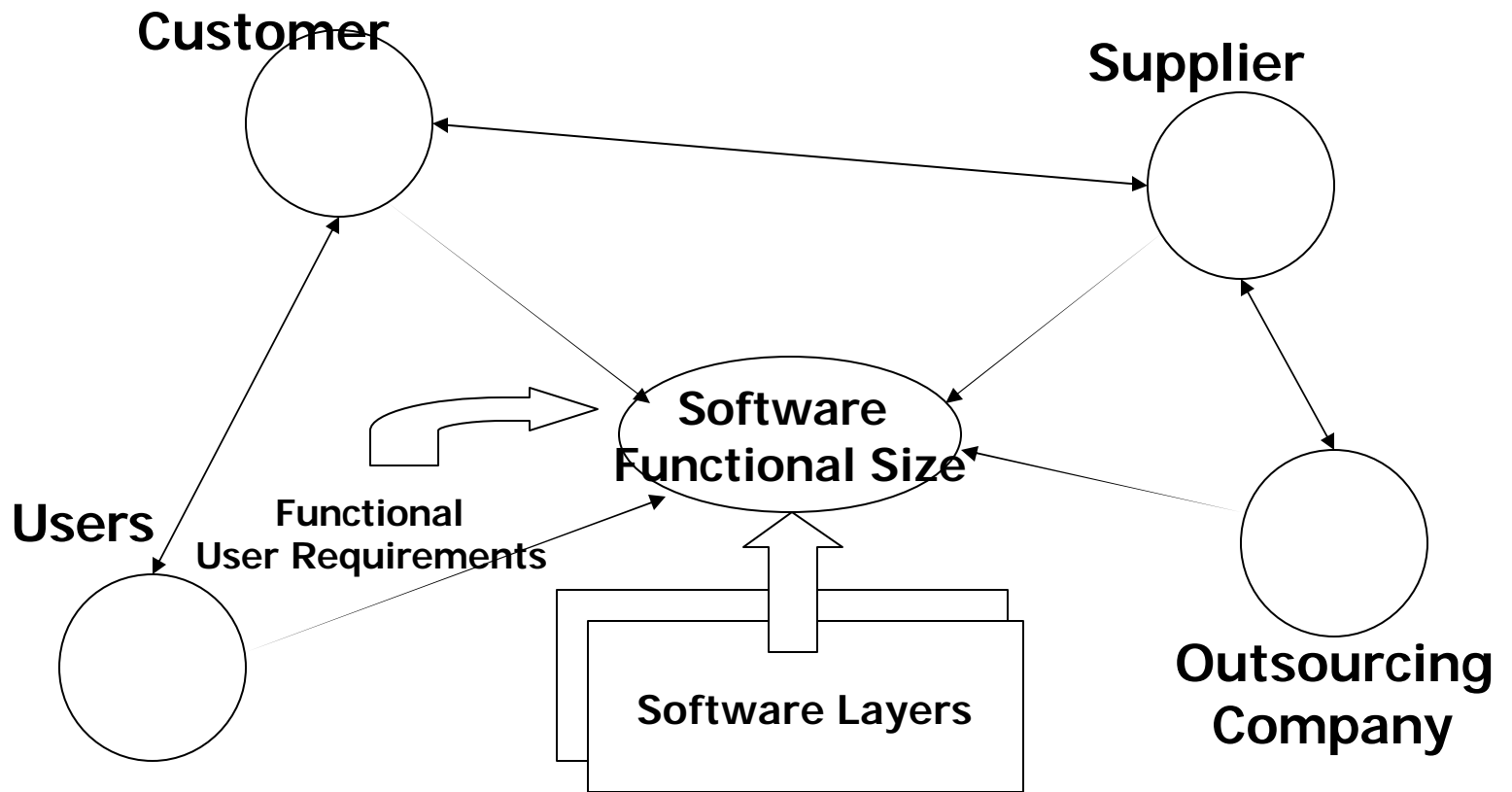
COSMIC-FFP Overview

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NOTE: Each piece of software is the user of the next piece across their shared boundary



Concurrent Viewpoints





COSMIC-FFP Outputs

- Functional Size:
 - for estimation
 - for productivity analysis and

+

- Quality analysis of the requirements:
 - Ambiguity
 - Inconsistency
 - Incompleteness,...(IEEE 830)
- Functional tests plans



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COSMIC-FFP

Key competitive advantages:

- Full ISO recognition
- Flexibility for a wide range of software:
 - Real-time software
 - Telecom
 - Embedded
 - MIS, etc.
- Ability to capture size from multiple viewpoints
- Compatibility with modern software engineering concepts
- **Free and accessible anywhere in the world**



COSMIC-FFP

- First method to be designed by an international team:
 - Multiple countries
 - Multiple backgrounds:
 - Industry
 - ISO
 - Research
- Simple: Easy to
 - train,
 - understand & use



COSMIC-FFP

- Recognized by:
 - ❖ International Repository Authority – ISBSG
- Translated into:
 - English
 - Japanese
 - Spanish
 - Italian
 - French
- Recognized research topic: a sound theoretical foundation



COSMIC-FFP

Some challenges:

- Not yet mainstream:
 - ❖ Being picked up by early adopters
 - ❖ Mainstream will follow
 - ❖ Catch-up to do in the international ISBSG repository
- Automation : The **tools** to support the industry and its key players:
 - software staff develop software with methodologies and software tool kits (The cultural factor)
 - Design (+ marketing) of support tools for data collection and analysis



COSMIC-FFP

2005 - Key needs for COSMIC-FFP

- Techniques for early size estimation
- Improved understanding of layers
- Integration within the education framework
- Repository of case studies

- Certification and accreditation?



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Conclusions

A tremendous **market need** for:

- Estimation
- Performance understanding
- Benchmarking
-+ quality up front in the requirements!

...and measurement, including Software Functional Size, can help



Conclusions

Next steps for you: The **know how**

- to apply COSMIC-FFP
- to leverage the COSMIC output for:
 - estimation
 - quality management
- It is up to you as active industry players



Resources

www.lrgl.uqam.ca/cosmic-ffp

www.cosmicon.com



QUESTIONS



THANK YOU FOR YOUR ATTENTION



Software Measurement

When does an industry **adopt** a technology?

- When the technology becomes integrated:
 - ❖ into the technological environment
 - ❖ within the business context
 - ❖ ...and has been proven to work well in a large variety of contexts
 - The technology has matured, or is maturing rapidly



Software Measurement

When-Why does an industry **promote a new** technology?

The industry must recognize that:

- Current practices are not good enough
- There is a direction that has been proven to work in other contexts
- It needs to speed up the transition to the new technology to overcome an acknowledged problem



Software Measurement

What about software measurement?

Who is doing what to speed up adoption?

- The big customers of software:
 - Design and deployment of software process assessment models
 - Regulatory framework
 - Consensus on measurement standards and on their fit into the national technology frameworks