Languages, Platforms, and Paradigms: Choosing for Long-Term Fit

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As a courtesy to your professional colleagues, kindly take a moment and set all personal electronic devices on silent or vibrate. Thank you!

Introduction

- Familiar vs. Best Suitable
- Short-term vs. Long-term
- Supportability
- Maintainability

Frameworks affect expression

- platforms
- paradigms
- languages

Platforms

- Operating systems (e.g., OpenVMS, *IX, Windows)
- Applications (e.g., Excel, LabView)
- Toolkits (e.g., jQuery, Motif)

Paradigms

- strict von Neumann (sequential)
- event-based, serialized
- fully parallel

Languages

- FORTRAN
- C/C++
- MatLab
- PERL, PHP, APL
- spreadsheets

Commonality – Modality of Expression

- vocabulary limits what can be said
- 3-space cannot be precisely represented in 2-space
- recusion vs. iteration
- polling vs. events
- single user vs. multiuser

What is needed now? AND in the future?

- What is the problem domain?
- How can the problem change?
- Headroom
- Short vs. long term leverage
  - Deceptive simplicity
  - Understanding prototypes
  - rewrite cost (monetary, schedule)

Platforms –

- What are the limits?
- What is/is not included?
  - *IX – no record formats; need database
  - Windows – multiuser/single user
  - *IX – “just add a tool”

Languages –

- are more static than their human analogues
- can be extended with frameworks and toolsets
- still, a fundamental feature may be missing
    - recursion
    - re-entrancy
    - pointers
    - data structures, types

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Paradigm –

- pre-emption; determinism
- scope limits/scope creep
- limits

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Summary

- expediency can be very costly
- foresight is priceless
- long-term costs/risks can dominate
- do not underestimate “technological debt”

Questions?

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Session Notes & Materials:
http://www.rlgsc.com/ieee/longisland/2011/languages-platforms-paradigms.ht