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BOOTSTRAP SEMINAR Nov 30 - Dec 2, 1992

Foil Set G:

ARCHITECTURE —

FOR INTEGRATED, SEAMLESS, EVOLVABLE INFO-SYSTEM

Douglas C. Engelbart, Bootstrap Institute

The papers in Sections O (Bib-20) provide a relatively thorough background rationale for this Section.

In particular, the concept of a "core knowledge workshop" for supporting future organizations clearly anticipated today's "enterprise integration" pursuits.

Section O (Bib-20) discusses partriculars of the following architectural modules, some of which argue for views about what should be done that aren't (yet?) generally held.

G1

BASIC FORMULATION FOR "THE AUGMENTED KNOWLEDGE WORKSHOP" < ref. -- 14724,1:elsym>

- 1. Concept of the knowledge workshop
- 2. Two ways in which augmented knowledge workshops are evolving
- 3. Basic assumptions about augmented knowledge workshops
- Selected description of workshop capabilities
- 5. Plans for a workshop utility service
- 6. Conclusion: Need for long-term commitment

These next three foils are as could be viewed within a small AUGMENT window looking into Bib-8.

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G2

3. BASIC ASSUMPTIONS ABOUT AUGMENTED KNOWLEDGE WORKSHOPS

- 3A. Embedded in a computer network
- 3B. Coordinated set of user interface principles
- 3C. Grades of user proficiency
- **3D.** Ease of communication between, and addition of, workshop domains
- 3E. User programming capability

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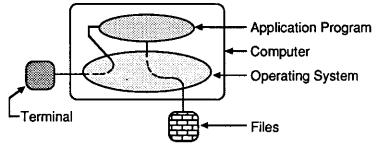
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3F. Availability of people-support services

BASIC "AKW ASSUMPTIONS" (Cont.)

- 3G. Cost decreasing, capabilities increasing
- **3H.** Range of workstations and symbol representations
- 31. Careful development of methodology
- 3J. Changed roles and organizational structure

AN APPLICATION PROGRAM DEPENDS UPON AN OPERATING-SYSTEM PROGRAM — to provide

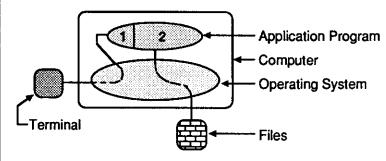


communication with files, terminals, printers, networks, etc.

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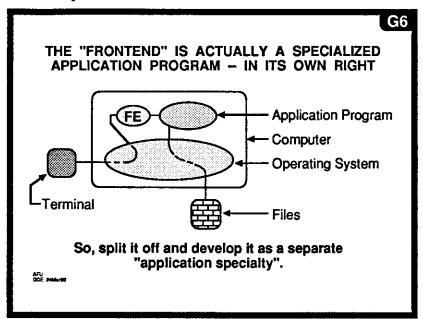
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AN APPLICATION	PROGRAM	HAS	TWO
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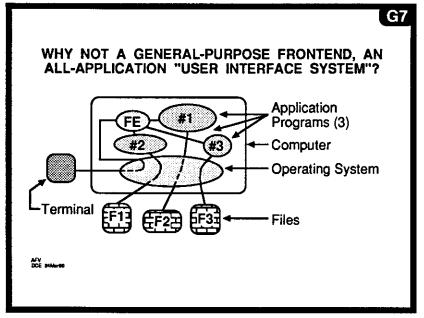


- (1) "Frontend" interfaces with the user;
- (2) "Backend" does the application work.

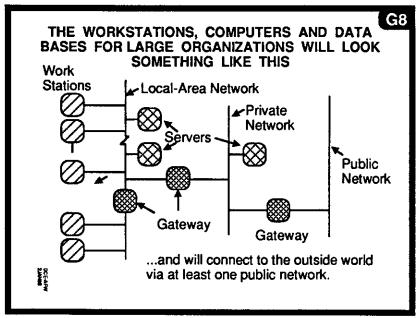
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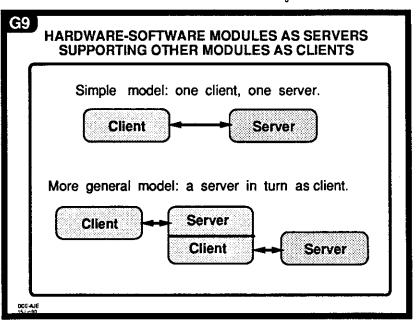


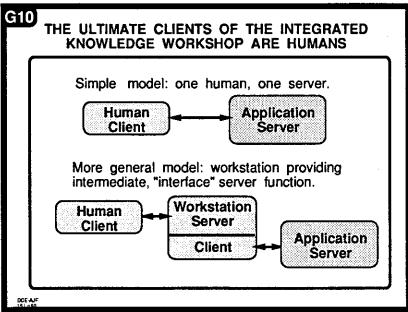
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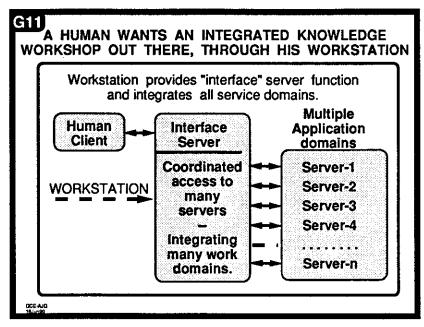


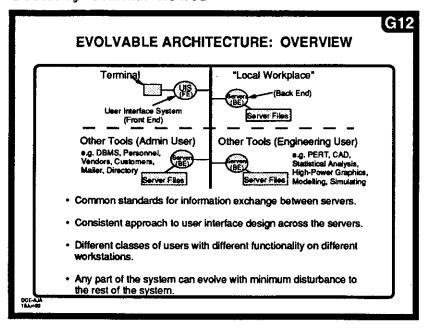
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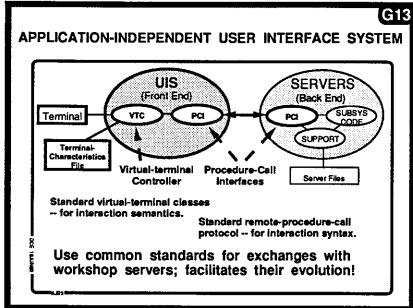




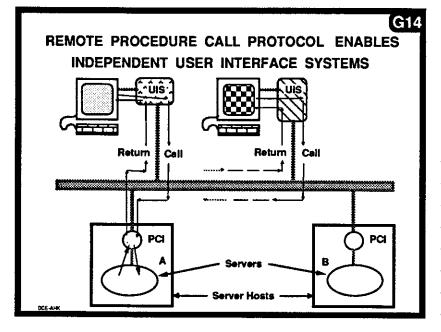




The "evolvability" character of an architecture needs definite recognition. Evolution must be accommodated not only within the technology infrastructure, but also within the users' domains of skill, knowledge, terminology, methods, roles, conventions, etc.



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G15 THE R-P PROTOCOL ENABLES SERVERS TO **BUILD UPON EACH OTHERS' CAPABILITIES** Client 4-Return 1-Call 3-Return Server PCI PCI Client ' Example: As for a smartagent module (B) giving specialized assistance in the use of Server A. DCE-AHL

Smart agents ("knowbots") will undoubtedly play increasingly important roles in future "integrated workshops."

G16]

AN APPROPRIATE WORKSHOP ARCHITECTURE PROVIDES A NATURAL, EVOLVING ROLE FOR AI

Modular, integrated open architecture enables the ready inclusion of special-service modules within any interconnection of other service modules.

In particular, smart-agent "Al" modules can steadily grow in their roles and usage within the indivdual and organizational knowledge workshops

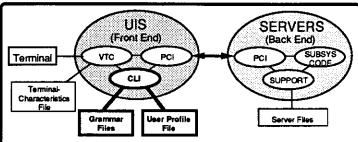
The smart agents, along with the other workshop functions and usage, should co-evolve with the methods, conventions, functions and skills of the humans. (A whole-system "engineering" approach.)

It will be very important for an organization to be able to support and shape the evolution of the working vocabulary utilized to operate within its common, "core workshop."

It seems almost inevitable that something like the grammar-driven CLI will have to emerge as a standard module.

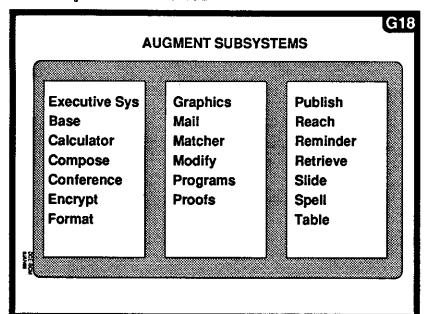
G17

APPLICATION-INDEPENDENT USER INTERFACE SYSTEM



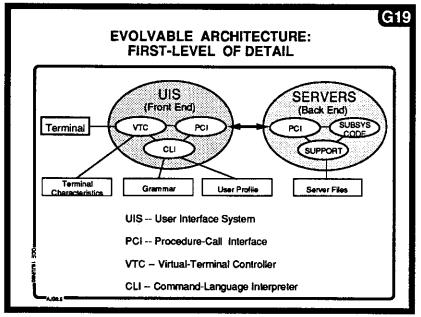
Grammar-driven Command-Language Interpeter (CLI) enables independent evolution of vocabulary for each class of user.

User-option profile enables independent evolution of style and expertise for each individual user.

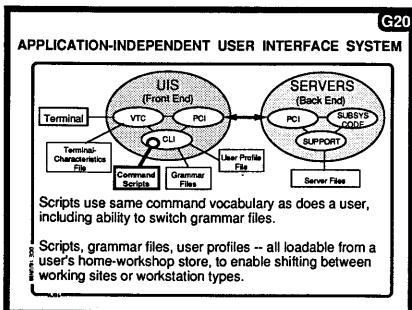


Switching from one "subsystem" to another for an AUGMENT user is effected by a simple command. It does not change the configuration or content of his current windows, but provides a new set of tools to apply within that current content.

With an OHS standard support module, this architectural approach opens the door for very flexible, multi-vendor utilities market.

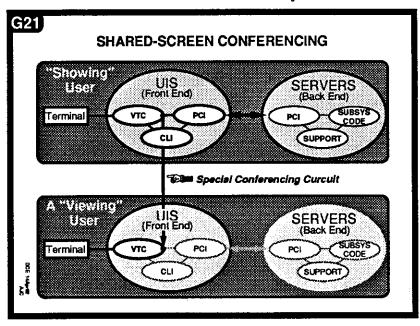


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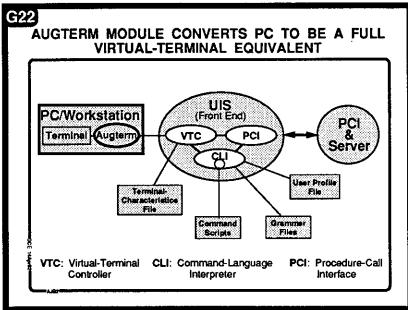


This grammar-driven CLI approach very handily supports the "user-programming capability" (3E in Foil G2 and page 11 of Bib-8 in Section O) at a very high level. Basic test and branching features enable quite sophisticated functions to be developed by "non programmers." Scripts are written, documented and executed as regular text objects in AUGMENT files.

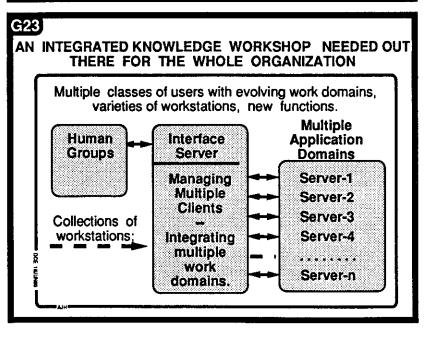
Use of the Conference Subsystem (see Foil G18) enables the setup and subsequent control of shared-screen conferencing. Control may be passed to any participant. The controlling user may employ any subsystem and operate upon any file to which the initiating, "showing" user has access. A participant may use any terminal equipment or workstation which the VTC module and a specific "characteristic" file provides for.



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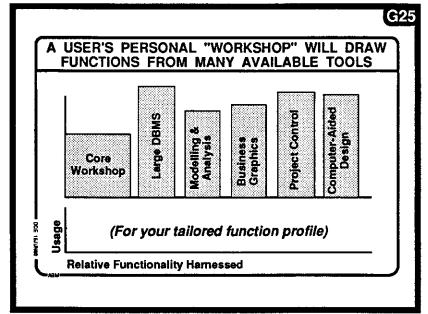


G24 EVOLVABLE ARCHITECTURE: DETAILS SERVERS UIS (Front End) (Back End) SUBSYS Terminal CLI SUPPORT Terminal User Profile Characteristics File File Command Grammar Server Files Scripts Common standards for information exchange between servers. · Consistent approach to user interface design across the servers. · Different classes of users with different functionality on different workstations. · Any part of the system can evolve with minimum disturbance to the rest of the system.

It is assumed here that different options will be available for the way the CLI interprets the "command" specifications that are compiled into the standard-format grammar files.

One set of options determines the extent of the vocabulary to be employed and another set determines the "look and feel" of the user interface.

A given user's choice of options are established (by him, or by a system support person) in his personalized "user profile" file, which he uses on whatever workstation he employs.



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