



Whitemarsh
Information Systems Corporation

Knowledge Worker Framework

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1. Key Points Identified in Government Accounting Office Reviews of Executive Branch Information Technology Programs

Date, Title & Document Number	Pg.	Key Points
4/14/94 HUD Information Resources: Strategic Focus and Improved Controls Needed GAO/AIMD-94-34	0:3	IRM resources have not been planned and managed to meet HUD missions and strategic objectives IRM not based on strategies, processes, resources, and information needed to achieve HUD missions and objectives. HUD does not have information architecture that provides standard frame work for government the management and use of information and IRM resources
	0:4	HUD does not have a business planning process to establish strategic objectives and determine the resources and information needs to achieve them
	1:1	Develop a systems development methodology that is consistent with federal guidelines, industry practices, and offers structure approach to solving problems and selecting and using the appropriate methods, tools, and techniques.
	2:1.1	HUD failed to effectively identify all its business functions in planning a multi-year financial management systems integration.
	2.2	HUD must embark on business planning, and business process re-engineering
	2.3	HUD lacks common data standards. HUDs systems that manage \$47B in housing are essentially useless.
	4.2	HUD has complex organization structure in which major program offices operate independently. To achieve organizational integration there must be careful assessments and plans. New roles, responsibilities, centralized policies and standards, and operating procedures must be created.
	5.2	Establish strategic business and IRM planning processes that are interlinked. Articulate missions, objectives, and priorities and the IRM supports required to achieve strategic objectives.

Note: The course contains six more pages of cited reasons for IT systems failure



2. The Zachman Framework:

Zachman Enterprise Architecture Framework						
	Data	Function	Network	People	Time	Motivation
Scope	List of Things Important to Business	List of Processes the Business Performs	List of Locations in Which the Business Operates	List of Organizations Important to the Business	List of Events Significant to the Business	List of Business Goals/strategies
Enterprise Model	Semantic Model	Business Process Model	Logistics Network	Work Flow Model	Master Schedule	Business Plan
System Model	Logical Data Model	Application Architecture	Distributed System Architecture	Human Interface Architecture	Processing Structure	Business Rule Model
Technology Model	Physical Model	System Design	System Architecture	Presentation Architecture	Control Structure	Rule Design
Detailed Representations	Data Definition	Program	Network Architecture	Security Architecture	Timing Definition	Rule Specification
Functioning Enterprise	Data	Function	Network	Organization	Schedule	Strategy

Database Programming and Design, Volume 10, #3, March 1997



2.1. Concerns with the Zachman Framework

- Information Systems Architecture
 - John Zachman, IBM Systems Journal, 1987
 - John Sowa, IBM Systems Journal, 1992
 - Tom Passin, The MITRE Corporation, September 1994
 - Barbara von Halle, NJ DAMA presentation, June 1996
- Does not distinguish between “man et al” and “machine et al”
- Mixes organizations and people
- Does not address objects (of any kind (there are five types)) coherently¹
- Misses a number of implementing technologies (client/server, DBMS, OOA&D, Web, etc.)
- Treats data in a 1970s–1980s single dimension
- It is not rigorously defined, thus, it can’t be rigorously and consistently implemented, maintained, or its content exchanged within and between organizations

¹ Zachman places objects, according to von Halle, within row 3, columns 1, 2, and 6



2.2 Zachman vs The GAO Studies

Zachman Enterprise Architecture Framework						
	Data	Function	Network	People	Time	Motivation
Scope	2	1	None	None	None	5
Enterprise Model	1	1	None	None	None	None
System Model	None	None	None	None	None	None
Technology Model	None	None	None	None	None	None
Detailed Representations	None	None	None	None	None	None
Functioning Enterprise	None	None	None	None	None	None

More than 120 different points related to problems with or improvements needed for multi-hundred million dollar projects.



3. The Knowledge Worker

- Primarily works with information and abstract concepts
- Involved with plans, schedules, estimates, and result assessments
- Primarily deal with objects (encapsulation of data, processes, and business rules)
- Activities mainly unautomated, some supported by automation
- Performs groups of functions in a variety of different ways and combinations
- Specialists within big organizations, and generalists within small organizations

The Knowledge-worker is complex, multi-faceted person who performs diverse functions of different complexities for one or more organizations.



3.1 Knowledge Worker Environments Today

- Enterprises commonly create computing supports for knowledge workers under the assumption that the functions they perform and the organizations through which they act are fixed and seldom change.
- Not only are these assumptions wrong, but when the functions and organizations do change, computing environment changes seldom keep pace because they are time consuming to specify, difficult to implement, and slow to accomplish.
- Slow-to-react computing environment changes become the very reason why information technology support to business functions and organizations cannot keep pace.



3.2 What We Need

- Computing environments that are object oriented,
- Independent to changes in knowledge worker functions and organizations, and
- That can react to the demands of real change in a timely fashion.



3.3 Knowledge Worker Framework Changes to Zachman Framework

- ! Moves the Why column, the last column in the Zachman framework from its role as justification or reason to be the first column in the Whitemarsh knowledge worker framework and labels it mission so that it can “drive” all the remaining columns and their unfolding rows;
- ! Incorporates a database object column that is a melding of the Zachman data and function column, and the rules portion (rows 3, 4, and 5) of the motivation column. Database objects are an essential component for heterogeneous, world wide database efforts. In contrast, the Zachman framework represents objects in row 3, columns 1, 3, and 6.
- ! Drops the network column because it really is a technology mechanism of implementation. This column, like other technology implementation mechanisms such as operating systems and database management systems form a technology dimension that is invisible within the knowledge worker framework--as it should be.
- ! Creates a function column to address human functions and/or human processes that may or may not involve business information systems
- ! Creates a business information systems column that interfaces with the function column and the database objects column
- ! Partitions five of the columns into two for “machine”, one for “interface”, and two for “man” to enable more flexibility, reuse,
- ! Redefines the first column of row headers into two subcolumns that classifies deliverables and indicates the overall major project phase in which the deliverables are created, and finally,
- ! Adds a last column of row headers to indicate “who” is responsible for overseeing the rows.



3.4. The Knowledge Worker Framework

Knowledge Worker Framework								
Viewpoint		Mission	Man-Machine Interface					Primary Responsibility
Project	Deliverables		Machine		Interface	Man		
			Database Object	Business Information System	Business Event	Business Function	Organization	
Specification	Scope	List of business missions	List of major business resources	List of business information Systems	List of interface events	List of major business scenarios	List of organizations	Architect
	Business	Mission hierarchies	Resource life cycles	Information sequencing and hierarchies	Event sequencing and hierarchies	Business scenario sequencing and hierarchies	Organization charts, jobs and descriptions	
Specification and Implementation	System	Policy hierarchies	Specified data model and Database object models	Information system designs	Invocation protocols, input and output data, and messages	Best practices, quality measures and accomplishment assessments	Job roles, responsibilities, and activity schedules	Architect and Engineer
Implementation	Technology	Policy execution enforcement	Implemented Data Model	Information systems application designs	Presentation layer information system instigators	Activity sequences to accomplish business scenarios	Procedure manuals, task lists, quality measures and assessments	Engineer
	Deployment	Installed business policy and procedures	Operational Data Model	Implemented information systems	Client & server windows and/or batch execution mechanisms	Office policies and procedures to accomplish activities	Daily schedules, shift and personnel assignments	
Operation	Operations	Operating business	Application Interface Data Models	Operating information systems	Start, stop, and messages	Detailed procedure based instructions	Daily activity executions, and assessments	



3.5 Knowledge Worker Environment Cells

Knowledge Worker Framework								
Viewpoint		Mission	Man-Machine Interface					Primary Responsibility
			Machine		Interface	Man		
Project	Deliverables		Database Object	Business Information System	Business Event	Business Function	Organization	
Specification	Scope	List of business missions	List of major business resources	List of business information Systems	List of interface events	List of major business scenarios	List of organizations	Architect
	Business	Mission hierarchies	Resource life cycles	Information sequencing and hierarchies	Event sequencing and hierarchies	Business scenario sequencing and hierarchies	Organization charts, jobs and descriptions	
Specification and Implementation	System	Policy hierarchies				Best practices, quality measures and accomplishment assessments	Job roles, responsibilities, and activity schedules	Architect and Engineer
Implementation	Technology	Policy execution enforcement				Activity sequences to accomplish business scenarios	Procedure manuals, task lists, quality measures and assessments	Engineer
	Deployment	Installed business policy and procedures				Office policies and procedures to accomplish activities	Daily schedules, shift and personnel assignments	
Operation	Operations	Operating business				Detailed procedure based instructions	Daily activity executions, and assessments	



3.6 Information Technology Cells

Knowledge Worker Framework								
Viewpoint		Mission	Man-Machine Interface					Primary Responsibility
			Machine		Interface	Man		
Project	Deliverables		Database Object	Business Information System	Business Event	Business Function	Organization	
Specification	Scope						Architect	
	Business							
Specification and Implementation	System		Specified Data Models and Database object models	Information system designs	Invocation protocols, input and output data, and messages		Architect and Engineer	
Implementation	Technology		Implemented Data Model	Information systems application designs	Presentation layer information system instigators		Engineer	
	Deployment		Operational Data Model	Implemented information systems	Client & server windows and/or batch execution mechanisms			
Operation	Operations		Application Interface Data Model	Operating information systems	Start, stop, and messages			



3.7 Knowledge Worker Framework vs The GAO Studies

Knowledge Worker Framework								
Viewpoint		Mission	Man-Machine Interface					Primary Responsibility
Project	Deliverables		Machine		Interface	Man		
			Database Object	Business Information System	Business Event	Business Function	Organization	
Specification	Scope	13	5	6	1	8	10	Architect
	Business	12	6	6	1	15	14	
Specification and Implementation	System	8	6	5	0	28	18	Architect and Engineer
Implementation	Technology	3	0	0	0	18	14	Engineer
	Deployment	1	0	0	0	12	11	
Operation	Operations	1	0	0	0	8	8	



3.8 Knowledge Worker Applicability Conclusions

- Re: the GAO issues Zachman Framework addresses virtually none
- The Knowledge Worker Framework addresses many more of the 120 points

Note:

- The GAO almost NEVER identified Information Technology as the Prime Source of Problems
- When knowledge worker environment cells are not properly addressed the project often fails
- When the “24” cells are properly handled the project seems to succeed.
- Message: pay proper attention to the “24” more than to the “12.”

While not paying attention to the “24” will almost always guarantee failure, paying attention to the “12” will almost never guarantee success.

