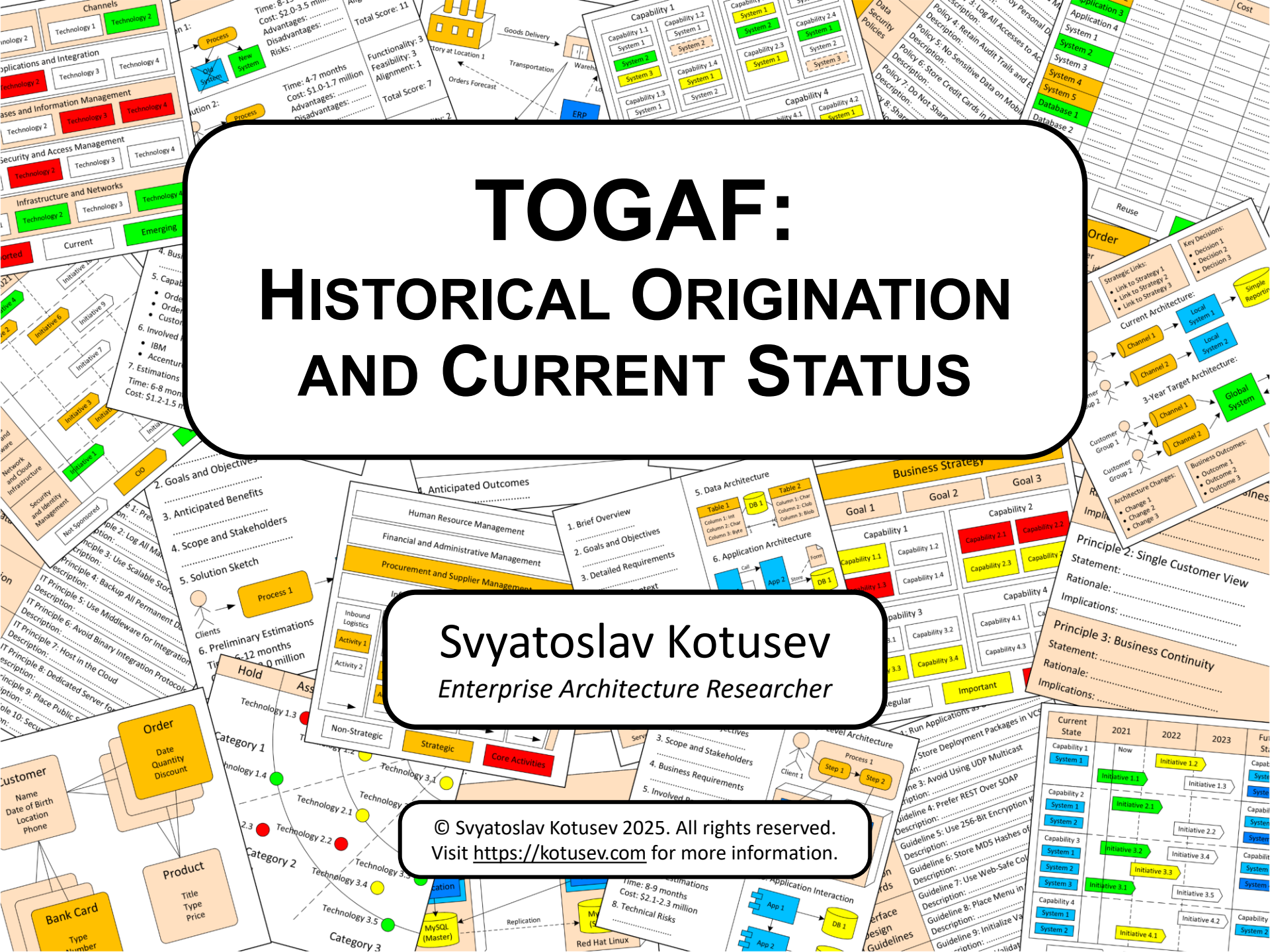
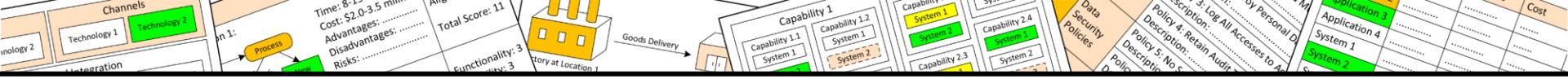
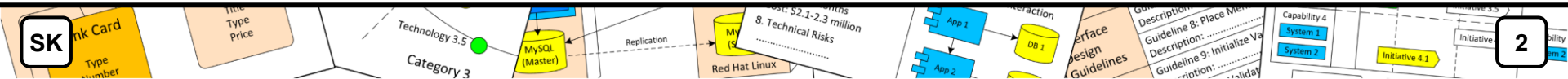


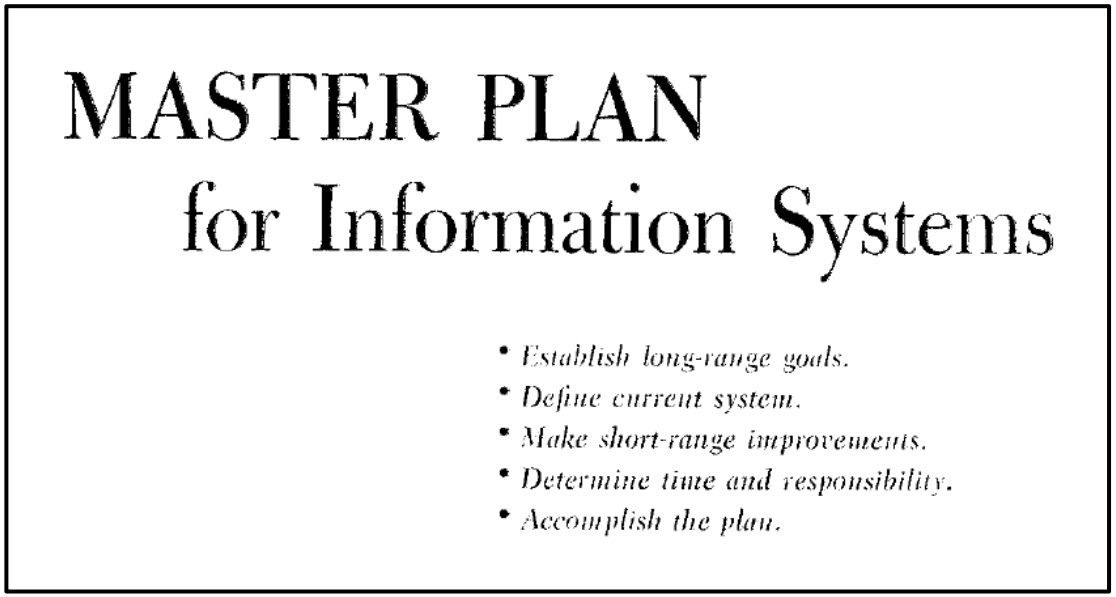


Part I: Planning Methodologies

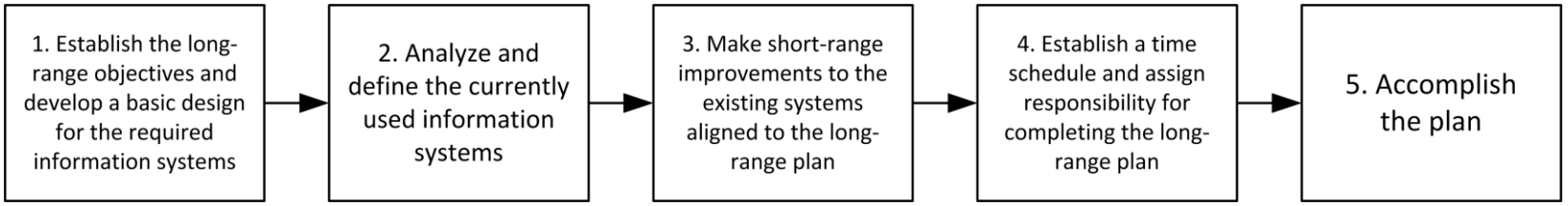
- Different methodologies in different epochs:
  - Information Systems Plans (1960s–1970s)
  - Information Systems Architecture (1970s–1980s)
  - Information Engineering (1980s–1990s)



Harvard Business Review (HBR)



(Evans, M. K. and Hague, L. R. (1962) "Master Plan for Information Systems", *Harvard Business Review*, Vol. 40, No. 1, pp. 92-103)



1962: Master Plan for Information Systems

International Business Machines (IBM)

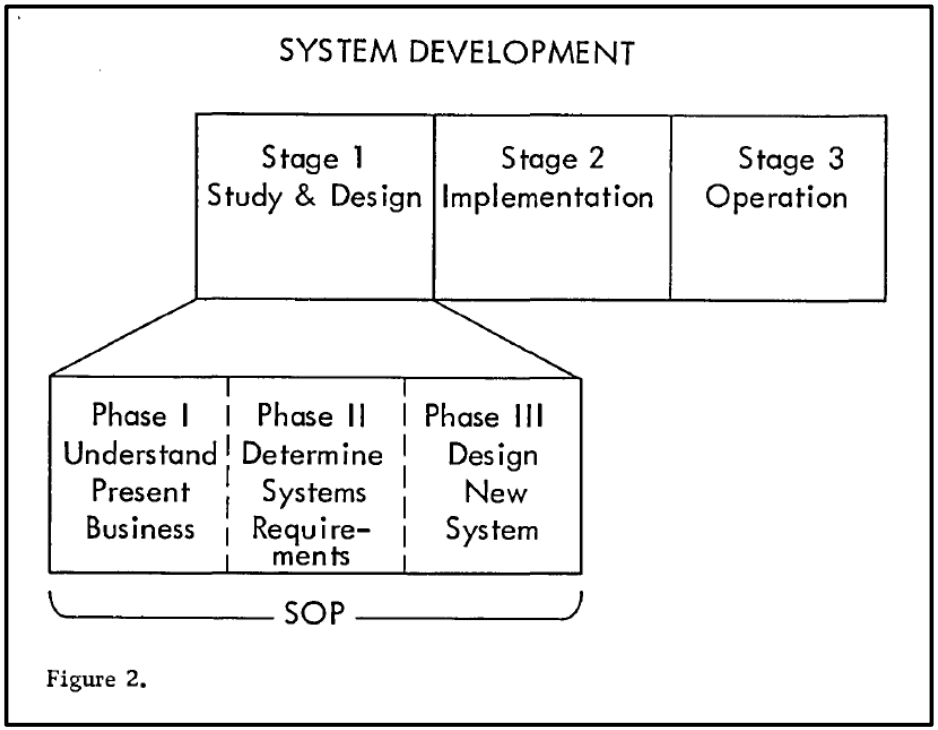


Figure 2.

(SOP (1963) "IBM Study Organization Plan: The Approach" (#SF20-8135-0), White Plains, NY: IBM Corporation)

(Glans, T. B., Grad, B., Holstein, D., Meyers, W. E. and Schmidt, R. N. (1968) *Management Systems*, New York, NY: Holt, Rinehart and Winston)

Study and design is itself separated into three phases:
Phase I — The existing system is studied to gain an insight into the business and its key relationships.
Phase II — Results of the Phase I study are blended with forecasts of foreseeable needs to develop an accurate specification of true system requirements.
Phase III — The new system is designed from specifications of its basic requirements, and communicated to management in the form of a new system plan.

1963–1968: Study Organization Plan (SOP)

International Business Machines (IBM)

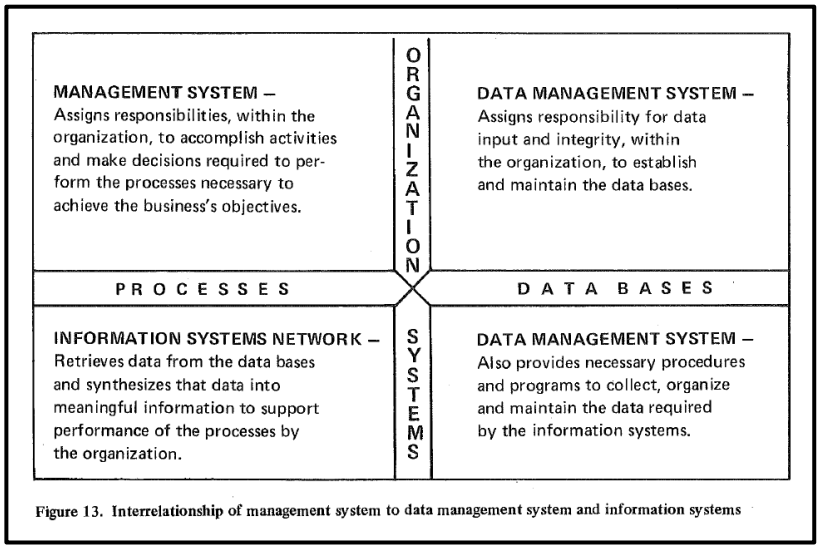


Figure 13. Interrelationship of management system to data management system and information systems

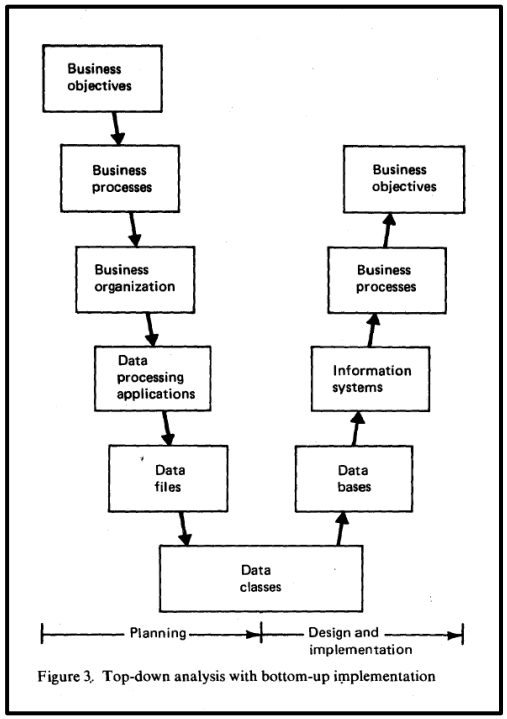


Figure 3. Top-down analysis with bottom-up implementation

A fundamental tenet underlying BSP is that an information systems plan for a business must be integrated with the business plan and should be developed from the point of view of top management and with their active participation.

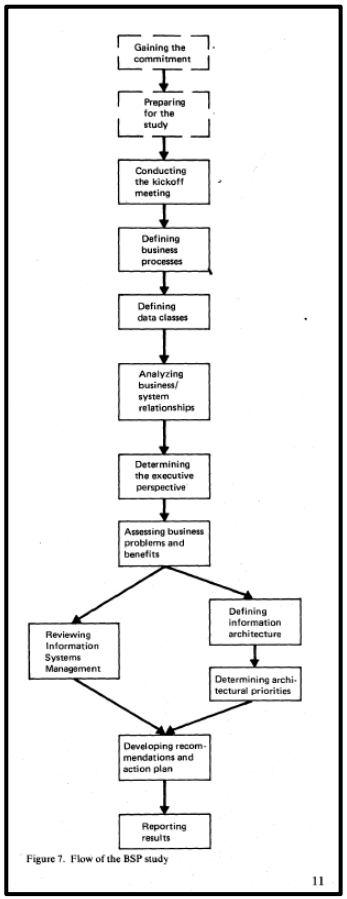


Figure 7. Flow of the BSP study

11

(BSP (1975) "Business Systems Planning: Information Systems Planning Guide (1st Edition)" (#GE20-0527-1), White Plains, NY: IBM Corporation)

(BSP (1978) "Business Systems Planning: Information Systems Planning Guide (2nd Edition)" (#GE20-0527-2), White Plains, NY: IBM Corporation)

(BSP (1984) "Business Systems Planning: Information Systems Planning Guide (4th Edition)" (#GE20-0527-4), Atlanta, GA: IBM Corporation)

1975–1984: Business Systems Planning (BSP)

Arthur Andersen (now Accenture)

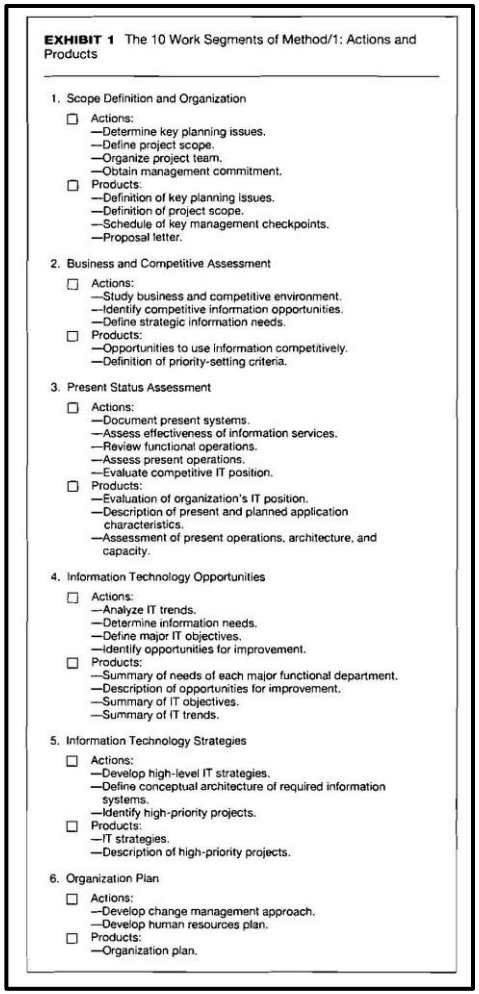


EXHIBIT 1 The 10 Work Segments of Method/1: Actions and Products

1. Scope Definition and Organization
   - ☐ Actions:
     - —Determine key planning issues.
     - —Define project scope.
     - —Organize project team.
     - —Obtain management commitment.
   - ☐ Products:
     - —Definition of key planning issues.
     - —Definition of project scope.
     - —Schedule of key management checkpoints.
     - —Proposal letter.
2. Business and Competitive Assessment
   - ☐ Actions:
     - —Study business and competitive environment.
     - —Identify competitive information opportunities.
     - —Define strategic information needs.
   - ☐ Products:
     - —Opportunities to use information competitively.
     - —Definition of priority-setting criteria.
3. Present Status Assessment
   - ☐ Actions:
     - —Document present systems.
     - —Assess effectiveness of information services.
     - —Review functional operations.
     - —Assess present operations.
     - —Evaluate competitive IT position.
   - ☐ Products:
     - —Evaluation of organization's IT position.
     - —Description of present and planned application characteristics.
     - —Assessment of present operations, architecture, and capacity.
4. Information Technology Opportunities
   - ☐ Actions:
     - —Analyze IT trends.
     - —Determine information needs.
     - —Define major IT objectives.
     - —Identify opportunities for improvement.
   - ☐ Products:
     - —Summary of needs of each major functional department.
     - —Description of opportunities for improvement.
     - —Summary of IT objectives.
     - —Summary of IT trends.
5. Information Technology Strategies
   - ☐ Actions:
     - —Develop high-level IT strategies.
     - —Define conceptual architecture of required information systems.
     - —Identify high-priority projects.
   - ☐ Products:
     - —IT strategies.
     - —Description of high-priority projects.
6. Organization Plan
   - ☐ Actions:
     - —Develop change management approach.
     - —Develop human resources plan.
   - ☐ Products:
     - —Organization plan.

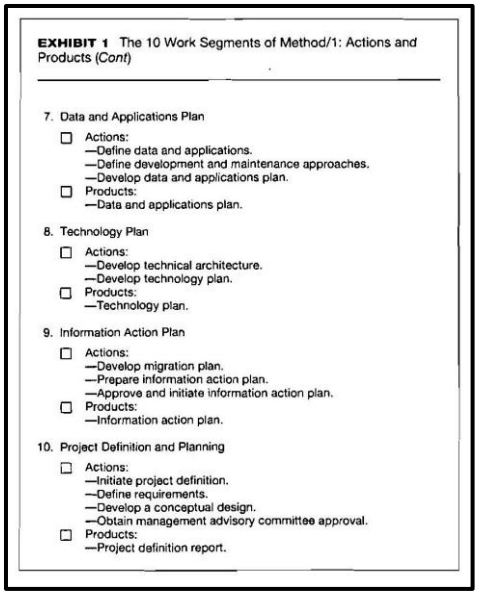


EXHIBIT 1 The 10 Work Segments of Method/1: Actions and Products (*Cont*)

7. Data and Applications Plan
   - ☐ Actions:
     - —Define data and applications.
     - —Define development and maintenance approaches.
     - —Develop data and applications plan.
   - ☐ Products:
     - —Data and applications plan.
8. Technology Plan
   - ☐ Actions:
     - —Develop technical architecture.
     - —Develop technology plan.
   - ☐ Products:
     - —Technology plan.
9. Information Action Plan
   - ☐ Actions:
     - —Develop migration plan.
     - —Prepare information action plan.
     - —Approve and initiate information action plan.
   - ☐ Products:
     - —Information action plan.
10. Project Definition and Planning
    - ☐ Actions:
      - —Initiate project definition.
      - —Define requirements.
      - —Develop a conceptual design.
      - —Obtain management advisory committee approval.
    - ☐ Products:
      - —Project definition report.

(Lederer, A. L. and Gardiner, V. (1992) "Strategic Information Systems Planning: The Method/1 Approach", *Information Systems Management*, Vol. 9, No. 3, pp. 13-20)

(Lederer, A. L. and Gardiner, V. (1992) "The Process of Strategic Information Planning", *Journal of Strategic Information Systems*, Vol. 1, No. 2, pp. 76-83)

1970s–1980s: Method/1

Coopers & Lybrand (now PwC)

(Remenyi, D. (1991) *Introducing Strategic Information Systems Planning*, Manchester, UK: NCC Blackwell)

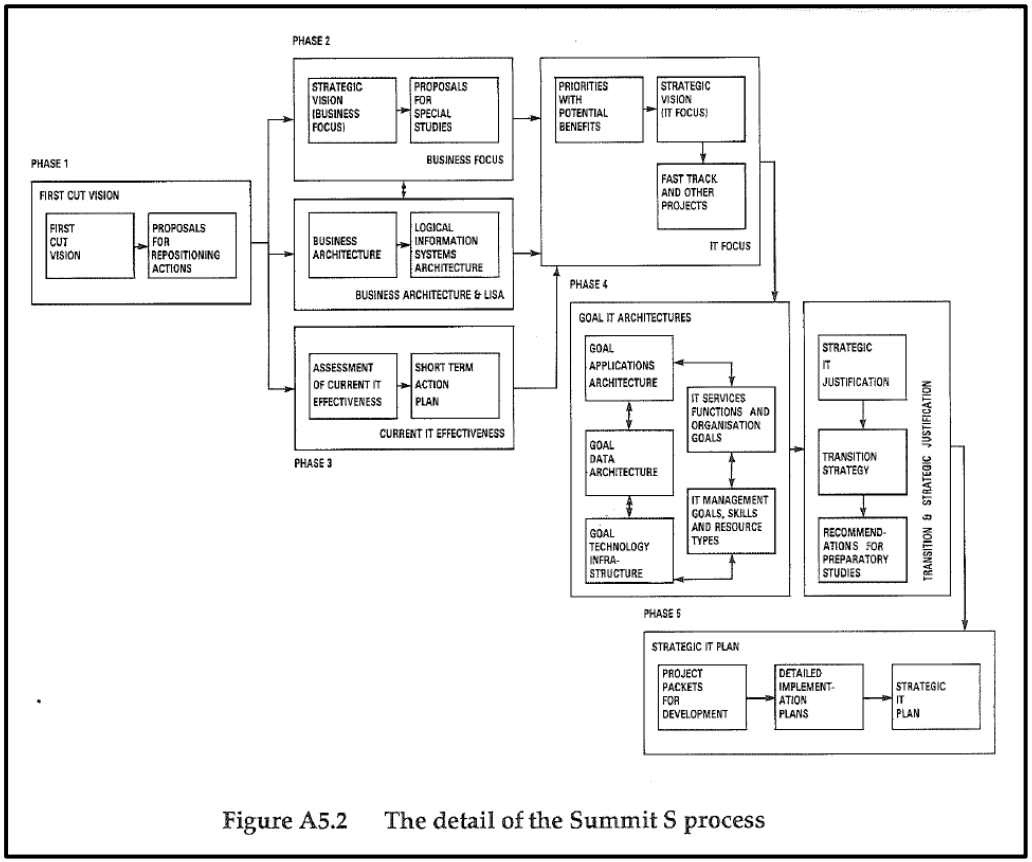


Figure A5.2 The detail of the Summit S process

1980s: Summit S

Deloitte & Touche (now Deloitte)

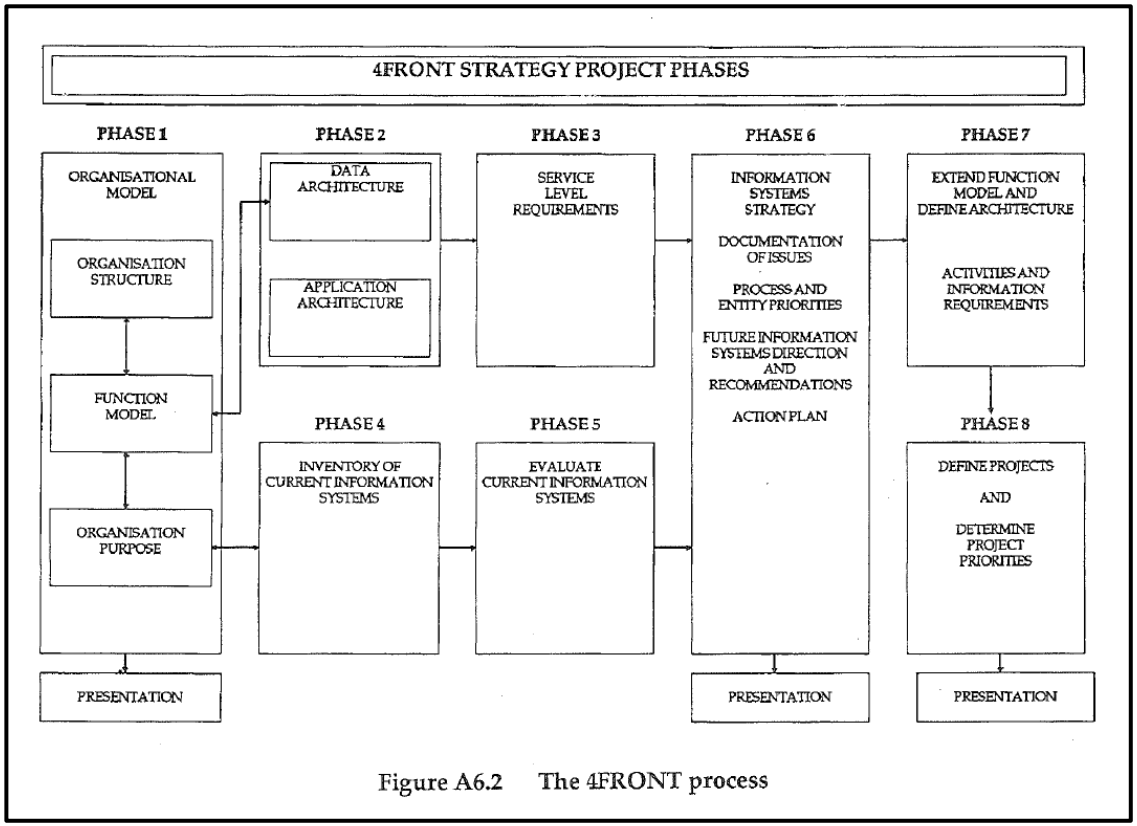


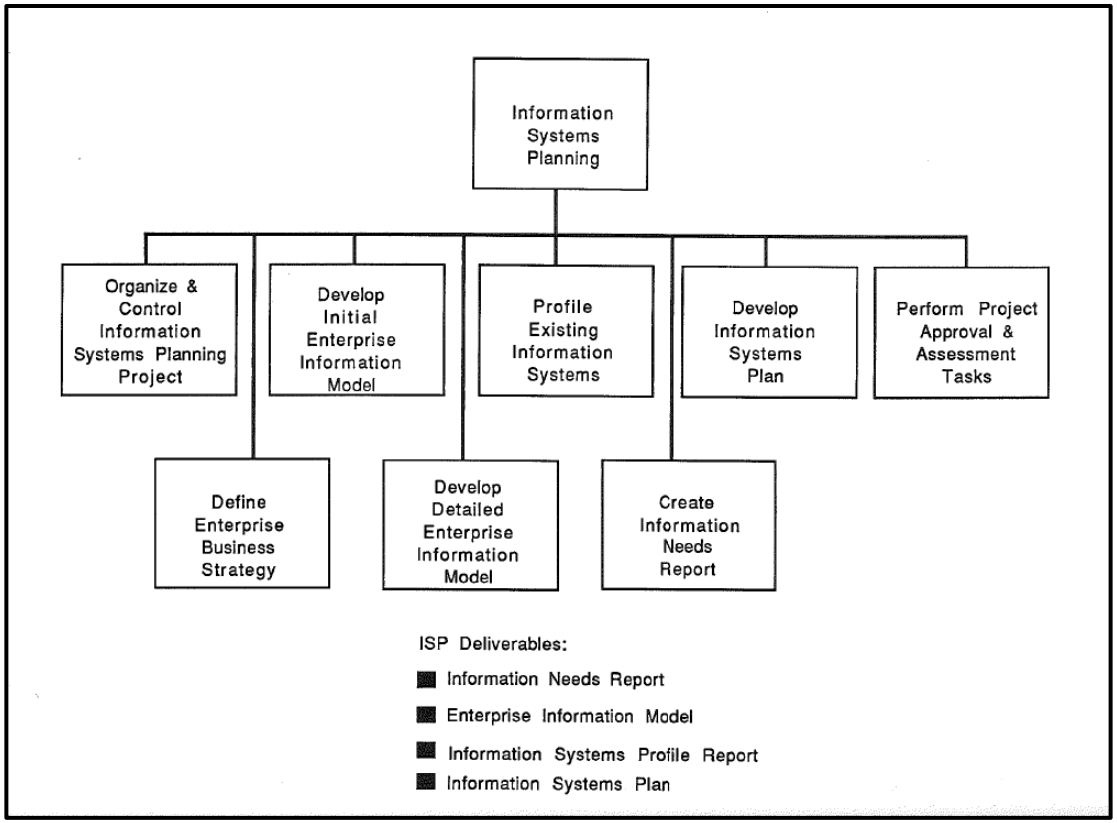
Figure A6.2 The 4FRONT process

(Remenyi, D. (1991) *Introducing Strategic Information Systems Planning*, Manchester, UK: NCC Blackwell)

1980s: 4FRONT

Arthur Young (now EY)

(Arthur Young (1987) *The Arthur Young Practical Guide to Information Engineering*, New York, NY: Wiley)



1980s: Information Engineering

Denis Connor

TABLE 1.1 The Stripe Matrix

	Business	Data	Application	Technical Environment	Type of Plan
STRATEGIC PLANNING	SP1 Business Strategy: Mission Objectives and Goals Strategic Directions Critical Success Factors (CSFs) Major Information Requirements SP2 Major Functions (Processes) SP4 User and MIS Department Evaluation SP4 Proposed Organizations	SP2 Data Architecture: Primary Entities Crown E-R Diagram Subject Data Bases	SP2 Application Architecture: Business Applications SP4 Current Application Evaluation	SP3 Technical Architecture: Function Distribution Computers and Peripherals Data Distribution Communications Software (DBMS, Dictionary, Security) Office Automation SP4 Evaluation of Current Hardware/Software, Communications and Office Automation	SP4 Migration Plan: Major Projects over a 3–5 year period
TACTICAL PLANNING	TP1 Function Expansion TP1 ASDM Policy TP1 Organization Change: IRM Function Education Function Strategic Planning Function Quality Assurance	TP2 Logical Data Bases: Entity Expansion Current Files/ Documents Comparison Data Normalization Data Distribution	TP3 Physical Application Definition	TP4 Hardware/Software Communications/ Office Automation Specifications TP5 Selection of: Computers, etc. Communications Equipment Software Office Automation Equipment and Software	SP5 Budget Year Plan: (or similar period) Prioritized Projects scheduled and resourced OP1 Individual Project Plans
OPERATIONAL PLANNING	OP2 Business System Specifications: Activity Level Functions Output Requirements Output Design OP9 System Implementation: Manual Procedures D.P. Operations Procedures Education OP7 System Test: Testing OP10 System Review: Business Needs Operating Efficiency	OP4 Physical Data Base Design: Activity Level Data Expansion Data Volumes Data Accesses Physical Data Bases Physical DB Access Modules OP7 Testing OP9 File Conversion	OP3 Procedure Design: Event and External Action/Condition Analysis Embryonic Procedures Menu Hierarchies Input Screens and Forms OP5 Procedure Expansion: File Update Logic Output Logic OP6 System Construction: Physical Procedures OP8 Package Acquisition OP7 System Test: Testing OP9 Production Libraries	OP11 Product Implementation: Product Acquisition Product Installation Product Conversion Product Testing	

(Connor, D. A. (1988) *Computer Systems Development: STrategic Resource Information Planning and Execution - STRIPE*, Englewood Cliffs, NJ: Prentice Hall)

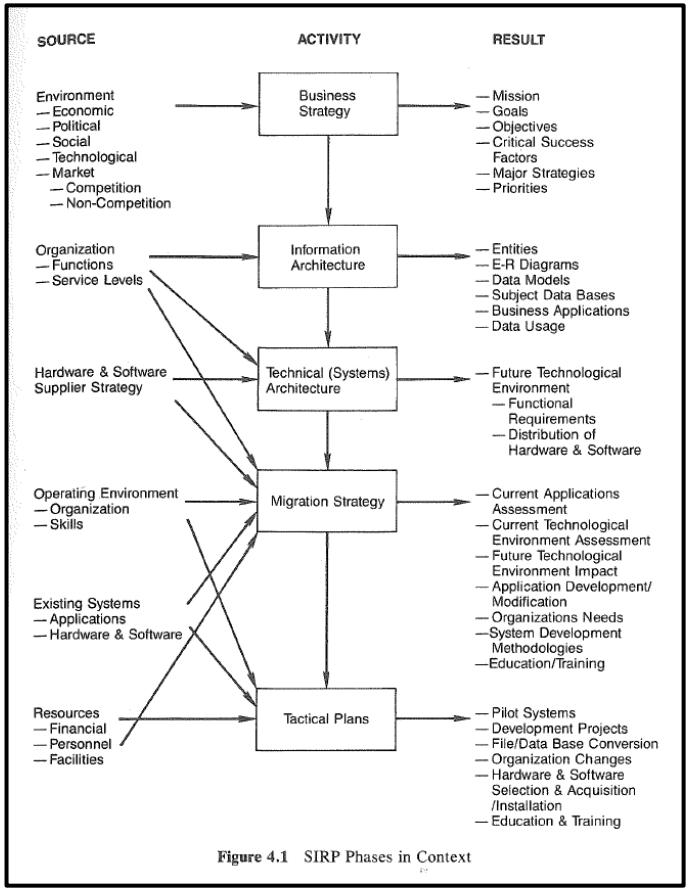


Figure 4.1 SIRP Phases in Context

1980s-1990s: Strategic Resource Information Planning and Execution (STRIPE)

Clive Finkelstein

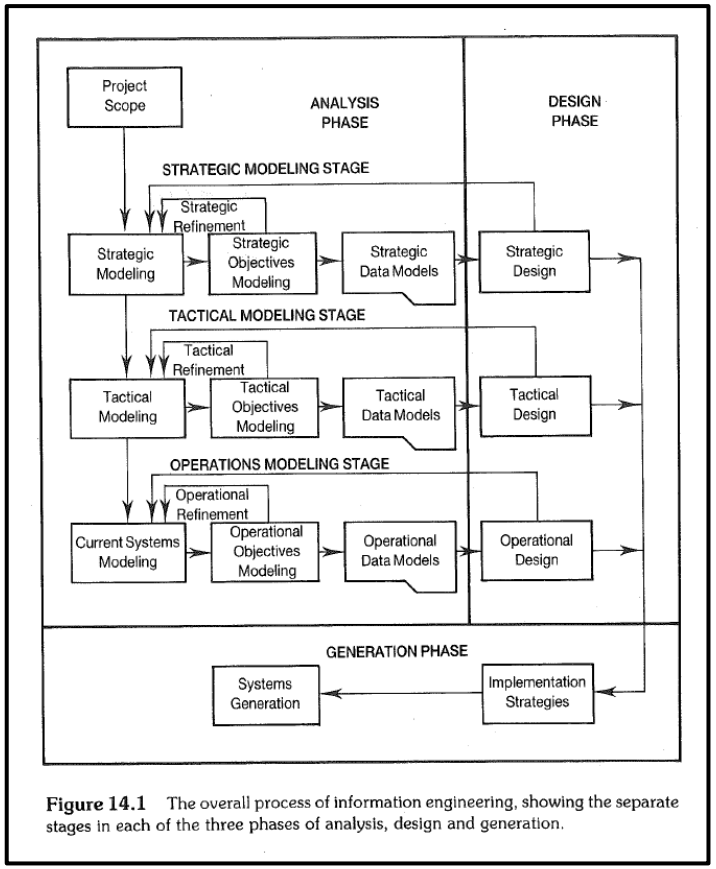


Figure 14.1 The overall process of information engineering, showing the separate stages in each of the three phases of analysis, design and generation.

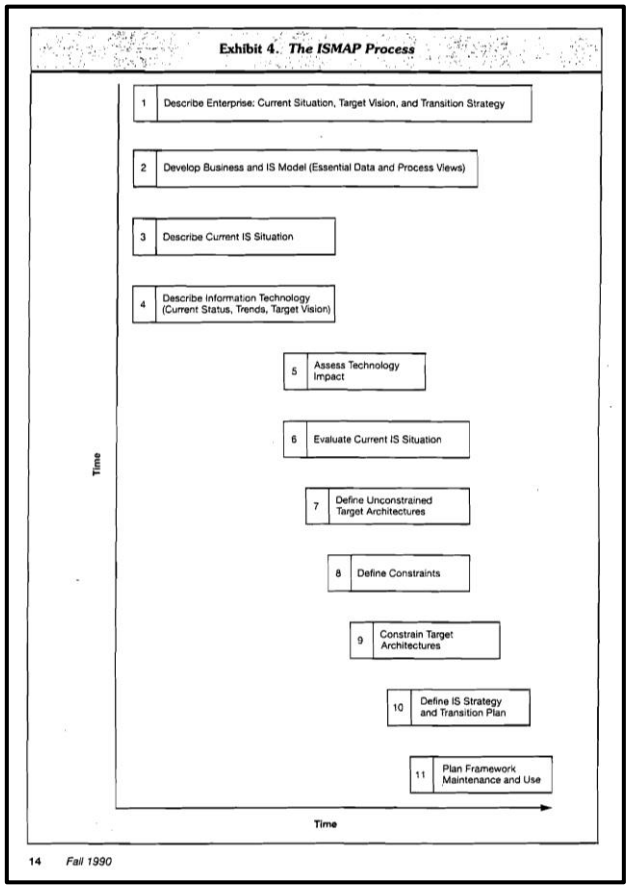
(Finkelstein, C. (1989) *An Introduction to Information Engineering: From Strategic Planning to Information Systems*, Sydney, Australia: Addison-Wesley)

(Finkelstein, C. (1992) *Information Engineering: Strategic Systems Development*, Sydney, Australia: Addison-Wesley)

1980s–1990s: Information Engineering

Atkinson, Tremblay & Associates

(Atkinson, R. A. and Montgomery, J. (1990) “Reshaping IS Strategic Planning”, *Journal of Information Systems Management*, Vol. 7, No. 4, pp. 9-17)



1980s–1990s: IS Master Architecture and Plan (ISMAP)

Edwin Tozer

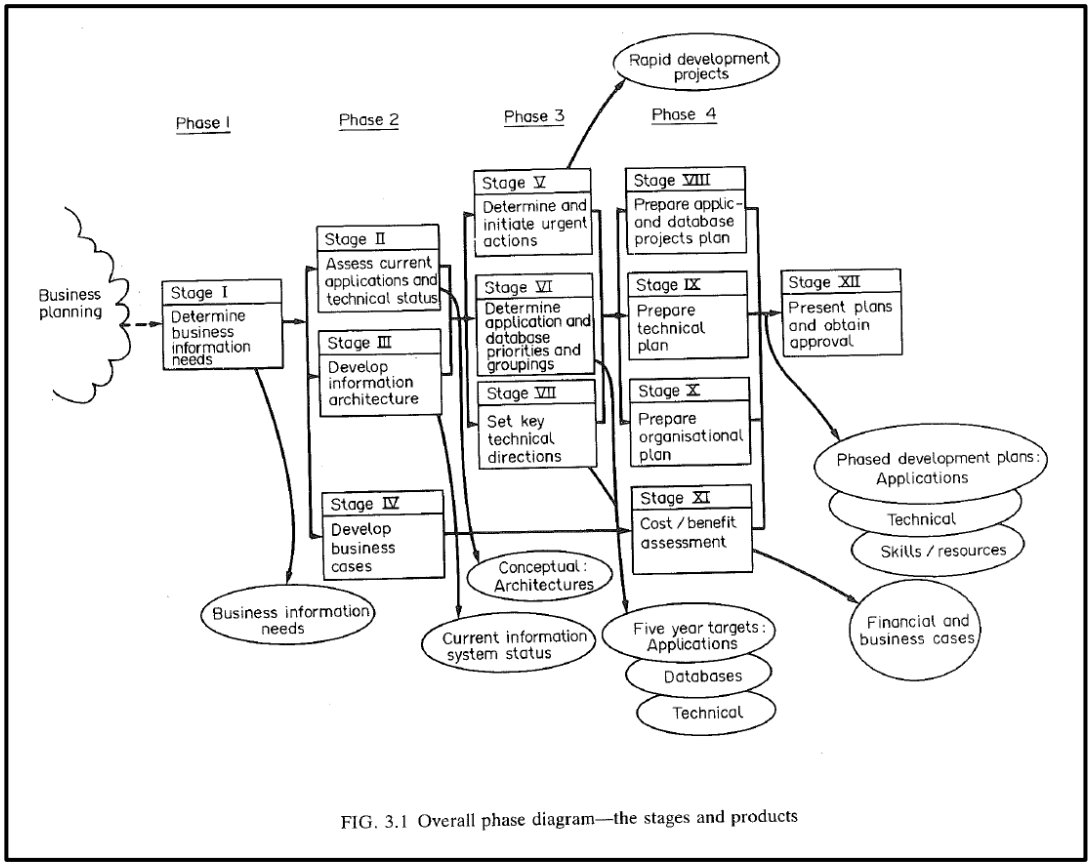


FIG. 3.1 Overall phase diagram—the stages and products

(Tozer, E. E. (1986) "Developing Strategies for Management Information Systems", *Long Range Planning*, Vol. 19, No. 4, pp. 31-40)

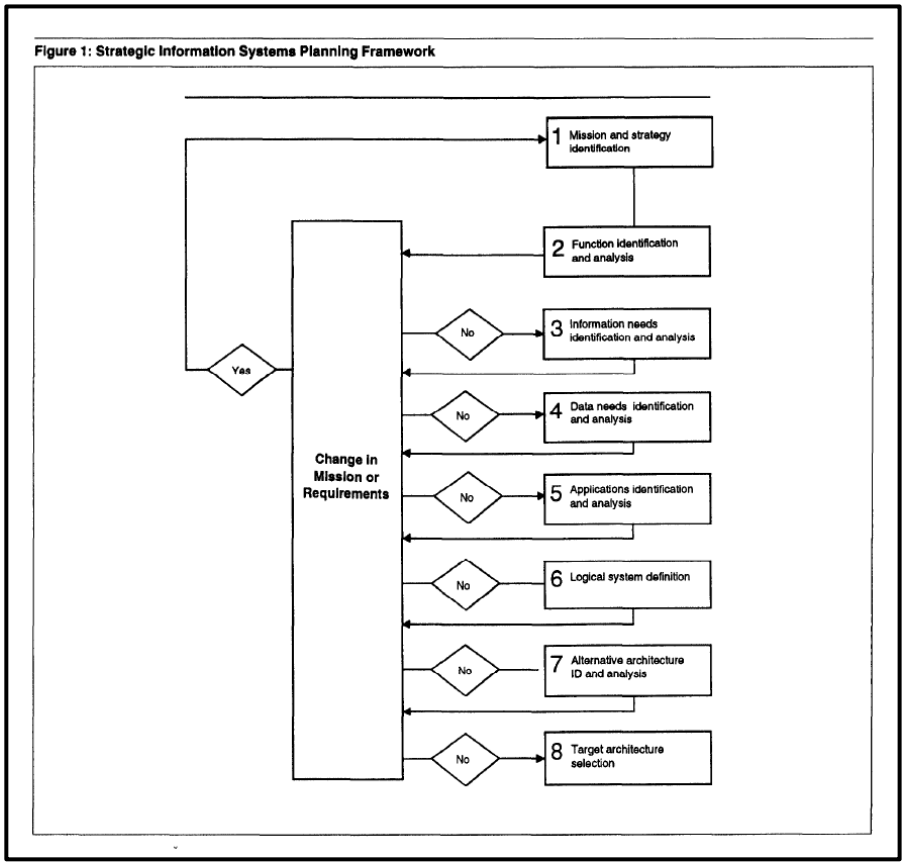
(Tozer, E. E. (1988) *Planning for Effective Business Information Systems*, Oxford, UK: Pergamon Press)

(Tozer, E. E. (1996) *Strategic IS/IT Planning*, Boston, MA: Butterworth-Heinemann)

1980s–1990s: Strategic Information Systems Planning

U.S. General Accounting Office

(GAO (1992) “Strategic Information Planning: Framework for Designing and Developing System Architectures” (#GAO/IMTEC-92-51), Washington, DC: Government Accountability Office)



1990s: Strategic Information Systems Planning Framework

U.S. Department of Defense

The four views of the integrated architecture are shown in Figure 1-1.

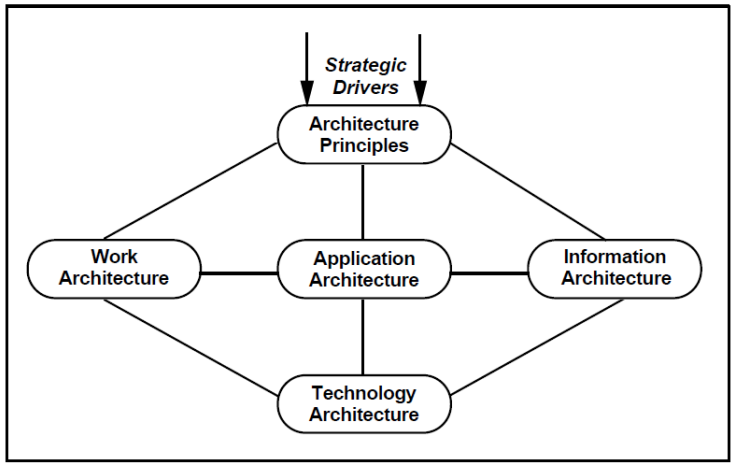


Figure 1-1. Architecture Modeling Framework

(TAFIM (1996) "Department of Defense Technical Architecture Framework for Information Management, Volume 4: DoD Standards-Based Architecture Planning Guide (Version 3.0)", Arlington County, VA: Defense Information Systems Agency)

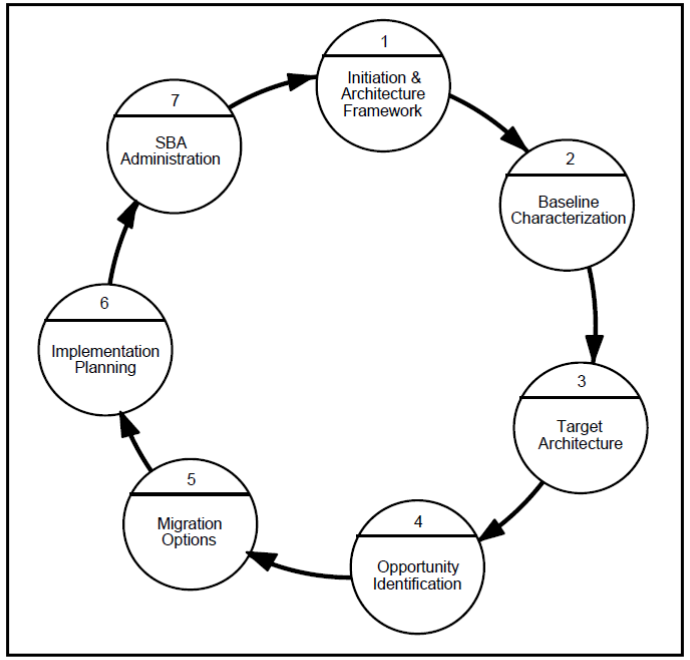


Figure 1. The DoD Standards-Based Architecture (SBA) Planning Process

1990s: Technical Architecture Framework for Information Management (TAFIM)

Steven Spewak

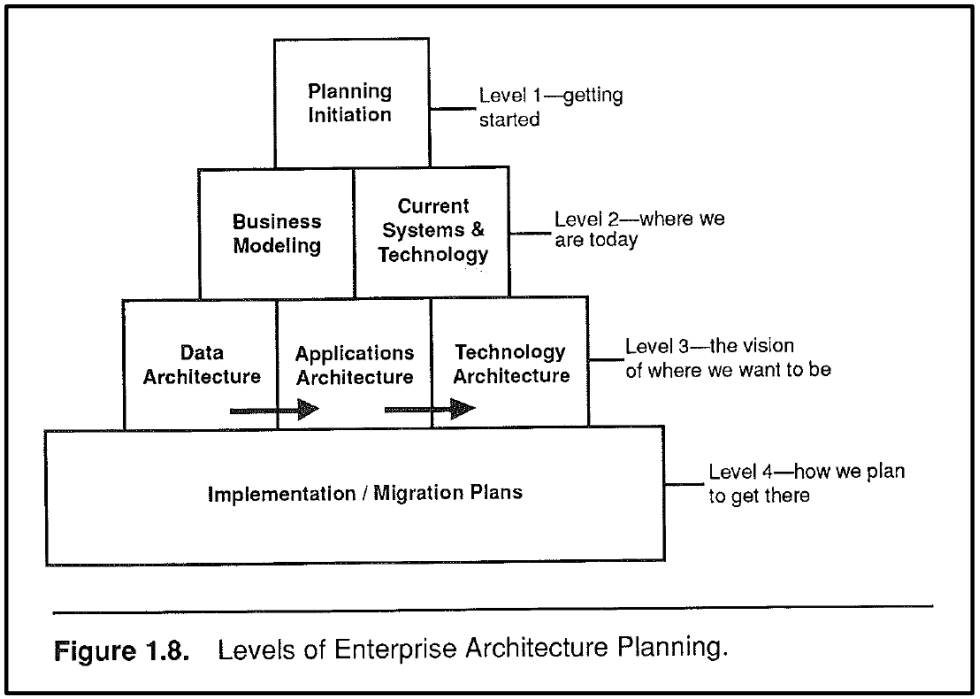


Figure 1.8. Levels of Enterprise Architecture Planning.

EAP has its roots in IBM's BSP.[5] Strategic Data Planning,[6] Information Engineering,[7] articles by Lederer,[8] and Goodhue[9] have also contributed techniques and ideas to EAP. Experience has shown, however, that a named methodology is not necessarily better than an unnamed one. Indeed, no one methodology is superior to another in all situations regardless of techniques or related products.

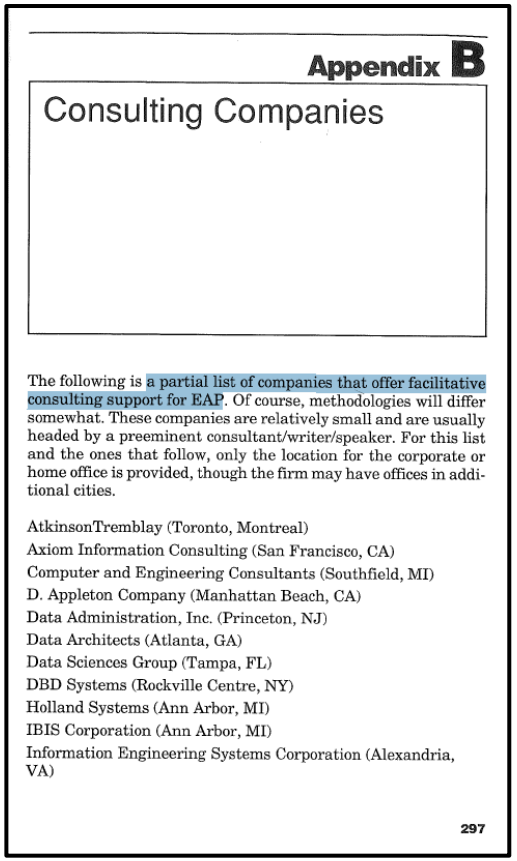
(Spewak, S. H. and Hill, S. C. (1992) *Enterprise Architecture Planning: Developing a Blueprint for Data, Applications and Technology*, New York, NY: Wiley)

1990s: Enterprise Architecture Planning (EAP)

Part II: Methodologies at Work

- Propagation of planning methodologies
- Implementation of planning methodologies
- Adoption of planning methodologies
- Outcomes of planning methodologies

Promoters of Methodologies



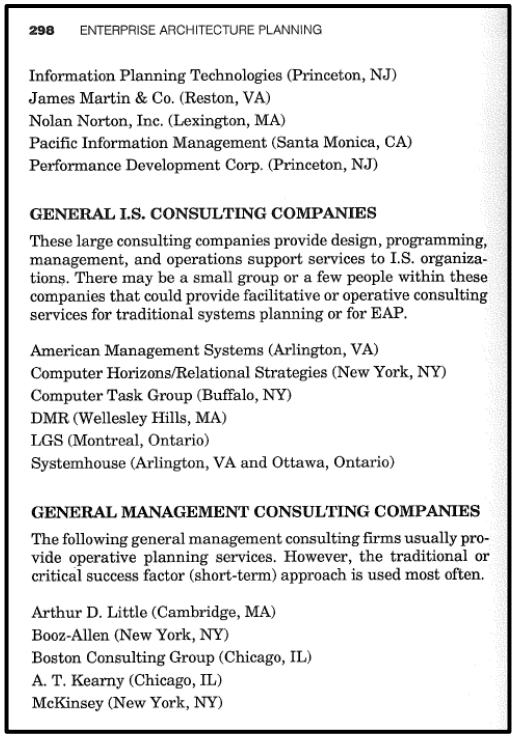
Appendix B

Consulting Companies

The following is a partial list of companies that offer facilitative consulting support for EAP. Of course, methodologies will differ somewhat. These companies are relatively small and are usually headed by a preeminent consultant/writer/speaker. For this list and the ones that follow, only the location for the corporate or home office is provided, though the firm may have offices in additional cities.

AtkinsonTremblay (Toronto, Montreal)
Axiom Information Consulting (San Francisco, CA)
Computer and Engineering Consultants (Southfield, MI)
D. Appleton Company (Manhattan Beach, CA)
Data Administration, Inc. (Princeton, NJ)
Data Architects (Atlanta, GA)
Data Sciences Group (Tampa, FL)
DBD Systems (Rockville Centre, NY)
Holland Systems (Ann Arbor, MI)
IBIS Corporation (Ann Arbor, MI)
Information Engineering Systems Corporation (Alexandria, VA)

297



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Information Planning Technologies (Princeton, NJ)
James Martin & Co. (Reston, VA)
Nolan Norton, Inc. (Lexington, MA)
Pacific Information Management (Santa Monica, CA)
Performance Development Corp. (Princeton, NJ)

GENERAL I.S. CONSULTING COMPANIES

These large consulting companies provide design, programming, management, and operations support services to I.S. organizations. There may be a small group or a few people within these companies that could provide facilitative or operative consulting services for traditional systems planning or for EAP.

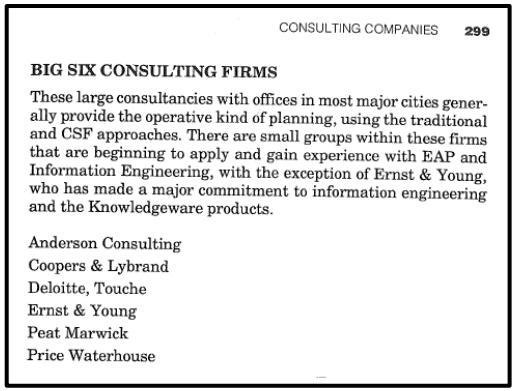
American Management Systems (Arlington, VA)
Computer Horizons/Relational Strategies (New York, NY)
Computer Task Group (Buffalo, NY)
DMR (Wellesley Hills, MA)
LGS (Montreal, Ontario)
Systemhouse (Arlington, VA and Ottawa, Ontario)

GENERAL MANAGEMENT CONSULTING COMPANIES

The following general management consulting firms usually provide operative planning services. However, the traditional or critical success factor (short-term) approach is used most often.

Arthur D. Little (Cambridge, MA)
Booz-Allen (New York, NY)
Boston Consulting Group (Chicago, IL)
A. T. Kearny (Chicago, IL)
McKinsey (New York, NY)

(Spewak, S. H. and Hill, S. C. (1992) *Enterprise Architecture Planning: Developing a Blueprint for Data, Applications and Technology*, New York, NY: Wiley)



CONSULTING COMPANIES 299

BIG SIX CONSULTING FIRMS

These large consultancies with offices in most major cities generally provide the operative kind of planning, using the traditional and CSF approaches. There are small groups within these firms that are beginning to apply and gain experience with EAP and Information Engineering, with the exception of Ernst & Young, who has made a major commitment to information engineering and the Knowledgeware products.

Anderson Consulting
Coopers & Lybrand
Deloitte, Touche
Ernst & Young
Peat Marwick
Price Waterhouse

In total, more than 20–30 planning methodologies are described in the literature

Every consultancy promoted their own methodology

Implementation of Methodologies

In the second step the team turned its attention inward, studying the film division in some depth. It identified and defined forty-six major activities, or business processes, that take place within the division, as well as which departments perform which activities. And it identified the 'data classes' required by each activity; twenty-four of these were found. Fox discovered that this step provided a good general education for team members, most of whom knew a lot about their own areas of responsibility but little about the rest of the division.

In the third step, the team grouped logically related processes and data classes. From this grouping, an information systems architecture was designed. It shows which information systems use which data classes to support certain business processes.

With the information system architecture in hand, the team moved on to identifying problem areas and delineating information system development priorities. To identify problem

(McNurlin, B. C. (1979) "What Information Do Managers Need?", *EDP Analyzer*, Vol. 17, No. 6, pp. 1-12)

IT Strategies Today: The UK Experience

Table 10.7. *The length of ITS studies: Current vs. Initial Practice*

Length of Study	Currently %	Initially %
Continuous process	5	5
Up to 1 month	8	7
1–2 months	33	16
3–5 months	41	40
6 months–1 year	9	23
1+ years	4	9

(Galliers, R. D. (1988) "Information Technology Strategies Today: The UK Experience", In: Earl, M. (ed.) *Information Management: The Strategic Dimension*, Oxford, UK: Clarendon Press, pp. 179-201)

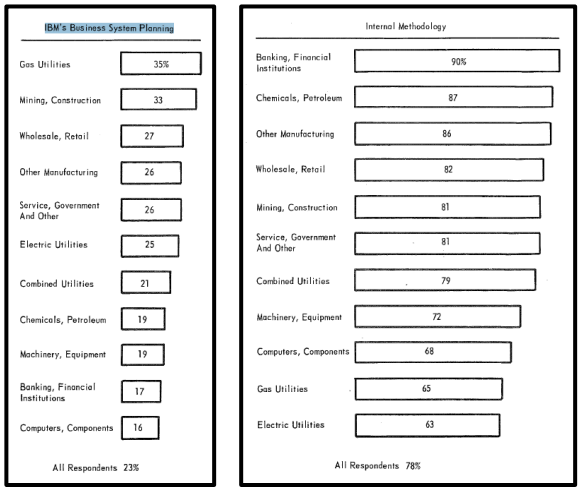
Atkinson Tremblay recently helped an air cargo company create a new system architecture and transition plan. Atkinson used this work as an example in his presentation. The core study team at the company consisted of six company people and three Atkinson Tremblay people. They worked for eight months on the project. First, they created the ideal target architecture. Next, they developed the practical target architecture that the company could realistically achieve. And finally they drafted the five-year migration path to implement the achievable architecture.

The study team created a system model that defined 110 essential processes within the business. They also created a data model of the business and found 240 essential data entities. These tended to fall into 24 areas—some could be clustered into planning and control subject databases, others fell within operational subject databases.

(McNurlin, B. C. (1988) "Implementing a New System Architecture", *I/S Analyzer*, Vol. 26, No. 10, pp. 1-16)

Methodologies were implemented <u>as described</u>

Adoption of Methodologies



(Hoffman, J. and Martino, C. (1983) "Information Systems Planning to Meet Business Objectives: A Survey of Practices", New York, NY: Cresap, McCormick and Paget)

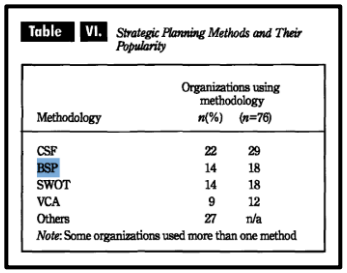


Table VI. *Strategic Planning Methods and Their Popularity*

Methodology	Organizations using methodology n(%)	(n=76)
CSF	22	29
BSP	14	18
SWOT	14	18
VCA	9	12
Others	27	n/a

Note: Some organizations used more than one method

(Fidler, C., Rogerson, S. and Spiers, N. (1993) "Current IS Practices within UK-Based Institutions", *Information Management and Computer Security*, Vol. 1, No. 2, pp. 13-20)

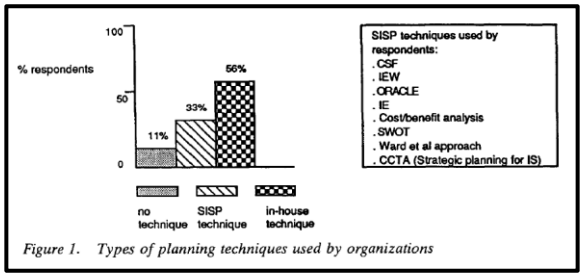


Figure 1. Types of planning techniques used by organizations

(Flynn, D. J. and Goleniewska, E. (1993) "A Survey of the Use of Strategic Information Systems Planning Approaches in UK Organizations", *Journal of Strategic Information Systems*, Vol. 2, No. 4, pp. 292-315)

Methodologies	%
Information Engineering	12
Business Systems Planning	8
Critical Success Factors	6
Value Chain	6
Others	13
Proprietary	55
	100%

(Premkumar, G. and King, W. R. (1991) "Assessing Strategic Information Systems Planning", *Long Range Planning*, Vol. 24, No. 5, pp. 41-58)

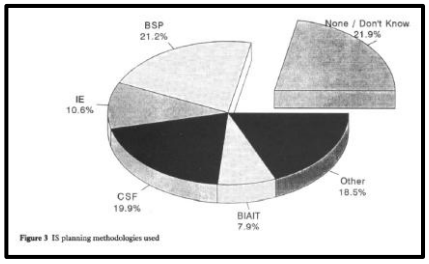


Figure 3 IS planning methodologies used

(Finnegan, P. and Fahy, M. J. (1993) "Planning for Information Systems Resources?", *Journal of Information Technology*, Vol. 8, No. 3, pp. 127-138)

The popularity of Information Engineering and BIAIT can be explained by their use as secondary methodologies as they are used in conjunction with the more popular ones mentioned above. The need to tailor the methodologies used to suit the organization, was illustrated by the fact that over 78% of respondents had the IS planning methodology developed or adapted internally.

This fact is also reflected in the approach of many studies, which again vary dramatically. In broad terms 'homebrew', in-house approaches out-number the well-known, proprietary methodologies by over 3:1 (previous research has shown that this is also the

(Galliers, R. D. (1986) "A Failure of Direction", *Business Computing and Communications*, Vol. 5, No. 7, pp. 32-38)

IS Planning Methodology	All Cases (A) Count	All Cases (A) % Cases[a]	IA Cases (B) Count	IA Cases (B) % Cases[a]	Ratio
Formal Methodologies					
Business System Planning (BSP)	6	3	6	4	1.00
Information Engineering (IEM)	22	12	20	14	0.91
Method/1	6	3	5	4	0.83
Nolan Norton Methodology	4	2	3	2	0.75
Other Methodologies/Techniques					
Critical Success Factor (CSF)	33	18	29	20	0.88
Value Chain Analysis	13	7	11	8	0.85
In-house Customised Methodologies	137	73	99	69	0.72
Other Methodologies[b]	31	16	25	18	0.81

a Multiple responses were possible.
b Soft systems methodology, other consultant-methodologies, business process analysis, portfolio management, leverage analysis, annual business planning and "common sense".

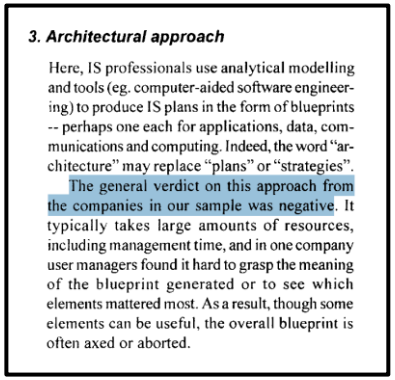
Figure 4.9: IS Planning Methodologies and Information Architecture

(Periasamy, K. P. (1994) *Development and Usage of Information Architecture: A Management Perspective*, PhD Thesis: University of Oxford, UK)

Methodologies were used by <u>15–25%</u> of organizations

Satisfaction with Methodologies

London Business School



3. Architectural approach

Here, IS professionals use analytical modelling and tools (eg. computer-aided software engineering) to produce IS plans in the form of blueprints -- perhaps one each for applications, data, communications and computing. Indeed, the word "architecture" may replace "plans" or "strategies".

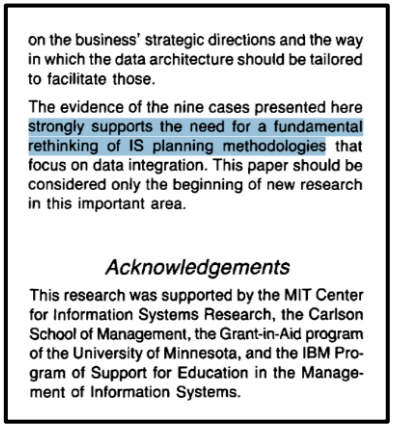
The general verdict on this approach from the companies in our sample was negative. It typically takes large amounts of resources, including management time, and in one company user managers found it hard to grasp the meaning of the blueprint generated or to see which elements mattered most. As a result, though some elements can be useful, the overall blueprint is often axed or aborted.

(Earl, M. J. (1990) "Approaches to Strategic Information Systems Planning: Experience in Twenty-One United Kingdom Companies", In: DeGross, J. I., Alavi, M. and Oppelland, H. J. (eds.) *Proceedings of the 11th International Conference on Information Systems*, Copenhagen: Association for Information Systems, pp. 271-277)

(Earl, M. J. (1993) "Experiences in Strategic Information Systems Planning", *MIS Quarterly*, Vol. 17, No. 1, pp. 1-24)

(Earl, M. J. (1996) "Research Round-Up: 1. Information Systems Strategy... Why Planning Techniques Are Not the Answer", *Business Strategy Review*, Vol. 7, No. 1, pp. 54-58)

MIT CISR



on the business' strategic directions and the way in which the data architecture should be tailored to facilitate those.

The evidence of the nine cases presented here strongly supports the need for a fundamental rethinking of IS planning methodologies that focus on data integration. This paper should be considered only the beginning of new research in this important area.

Acknowledgements

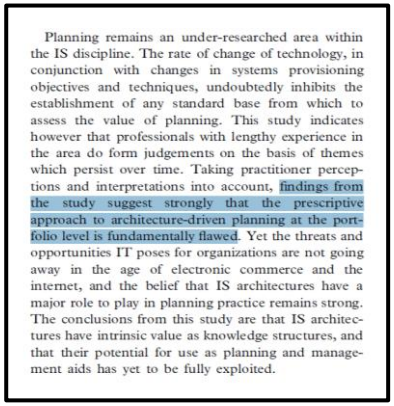
This research was supported by the MIT Center for Information Systems Research, the Carlson School of Management, the Grant-in-Aid program of the University of Minnesota, and the IBM Program of Support for Education in the Management of Information Systems.

(Goodhue, D. L., Quillard, J. A. and Rockart, J. F. (1986) "The Management of Data: Preliminary Research Results", Cambridge, MA: Center for Information Systems Research (CISR), MIT Sloan School of Management)

(Goodhue, D. L., Quillard, J. A. and Rockart, J. F. (1988) "Managing the Data Resource: A Contingency Perspective", *MIS Quarterly*, Vol. 12, No. 3, pp. 373-392)

(Goodhue, D. L., Kirsch, L. J., Quillard, J. A. and Wybo, M. D. (1992) "Strategic Data Planning: Lessons from the Field", *MIS Quarterly*, Vol. 16, No. 1, pp. 11-34)

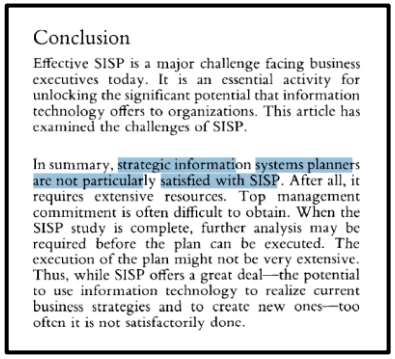
Monash University



Planning remains an under-researched area within the IS discipline. The rate of change of technology, in conjunction with changes in systems provisioning objectives and techniques, undoubtedly inhibits the establishment of any standard base from which to assess the value of planning. This study indicates however that professionals with lengthy experience in the area do form judgements on the basis of themes which persist over time. Taking practitioner perceptions and interpretations into account, findings from the study suggest strongly that the prescriptive approach to architecture-driven planning at the portfolio level is fundamentally flawed. Yet the threats and opportunities IT poses for organizations are not going away in the age of electronic commerce and the internet, and the belief that IS architectures have a major role to play in planning practice remains strong. The conclusions from this study are that IS architectures have intrinsic value as knowledge structures, and that their potential for use as planning and management aids has yet to be fully exploited.

(Hamilton, D. (1999) "Linking Strategic Information Systems Concepts to Practice: Systems Integration at the Portfolio Level", *Journal of Information Technology*, Vol. 14, No. 1, pp. 69-82)

University of Pittsburgh



Conclusion

Effective SISP is a major challenge facing business executives today. It is an essential activity for unlocking the significant potential that information technology offers to organizations. This article has examined the challenges of SISP.

In summary, strategic information systems planners are not particularly satisfied with SISP. After all, it requires extensive resources. Top management commitment is often difficult to obtain. When the SISP study is complete, further analysis may be required before the plan can be executed. The execution of the plan might not be very extensive. Thus, while SISP offers a great deal—the potential to use information technology to realize current business strategies and to create new ones—too often it is not satisfactorily done.

(Lederer, A. L. and Sethi, V. (1988) "The Implementation of Strategic Information Systems Planning Methodologies", *MIS Quarterly*, Vol. 12, No. 3, pp. 445-461)

(Lederer, A. L. and Sethi, V. (1989) "Pitfalls in Planning", *Datamation*, Vol. 35, No. 11, pp. 59-62)

(Lederer, A. L. and Sethi, V. (1992) "Meeting the Challenges of Information Systems Planning", *Long Range Planning*, Vol. 25, No. 2, pp. 69-80)

Three key problems:

1) Execution is laborious
2) Deliverables are arcane
3) Planning is disconnected

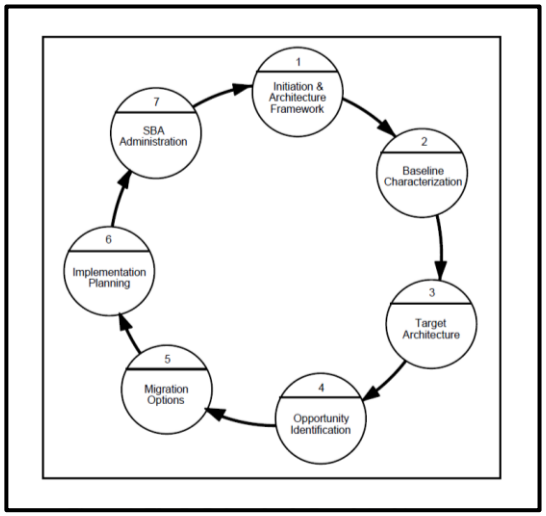
Organizations were <u>unsatisfied</u> with methodologies

Part III: Inception of TOGAF

- Initial emergence of TOGAF
- Historical evolution of TOGAF
- Planning methodology of TOGAF
- Reasons for TOGAF's "success"

Emergence of TOGAF

TAFIM Version 3.0 (1996)

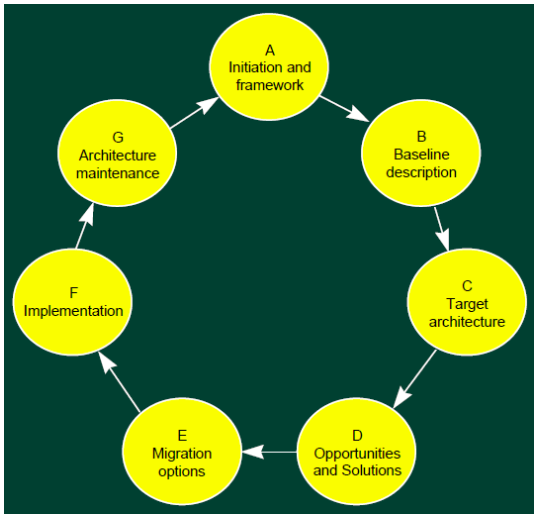


> The Open Group Architectural Framework (TOGAF) is both the framework and accompanying method we espouse in this text as that which is most likely to meet our criteria. It is interesting to note that TOGAF is most definitely a branch of TAFIM and given TAFIM's status, extremely unlikely to be merged into the main development stream.

> When one compares the extant TAFIM documentation with earlier versions of TOGAF, there is almost a palpable isomorphism between them.

(Perks, C. and Beveridge, T. (2003) *Guide to Enterprise IT Architecture*, New York, NY: Springer)

TOGAF Version 3 (1998)



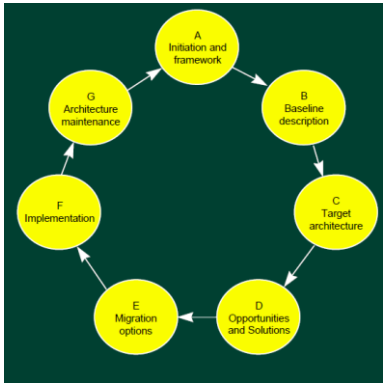
> TOGAF is developed and maintained by members of The Open Group, working within the Architecture Forum (refer to www.opengroup.org/architecture). The original development of TOGAF Version 1 in 1995 was based on the Technical Architecture Framework for Information Management (TAFIM), developed by the US Department of Defense (DoD). The DoD gave The Open Group explicit permission and encouragement to create TOGAF by building on the TAFIM, which itself was the result of many years of development effort and many millions of dollars of US Government investment.

(TOGAF (2009) "TOGAF Version 9" (#G091), Reading, UK: The Open Group)

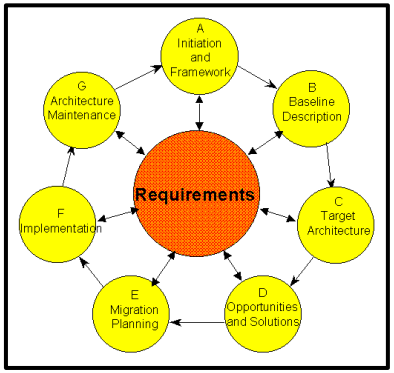
TOGAF was initially <u>copied</u> from TAFIM

Evolution of TOGAF

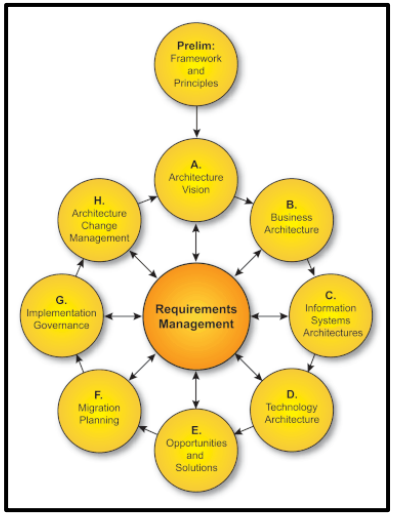
Versions 3–4



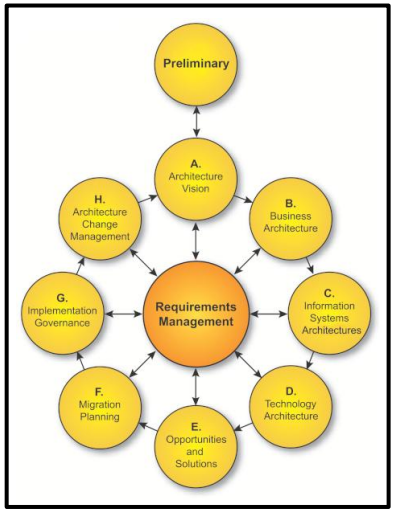
Versions 5–7



Version 8



Version 9



TOGAF evolved by <u>rearranging</u> the phases of ADM

TOGAF Methodology

The Open Group Architecture Framework (TOGAF) is a framework — a detailed method and a set of supporting tools — for developing an enterprise architecture. It may be used freely by any organization wishing to develop an enterprise architecture for use within that organization (see Section 4.5.1).

PART II (Architecture Development Method) This is the core of TOGAF. It describes the TOGAF Architecture Development Method (ADM) — a step-by-step approach to developing an enterprise architecture.

Within the model, the content of the TOGAF document is categorized according to the following four categories:

- **TOGAF Core** consists of the fundamental concepts that form the essence of TOGAF.
- **TOGAF Mandated** consists of the normative parts of the TOGAF specification. These elements of TOGAF are central to its usage and without them the framework would not be recognizably TOGAF. Strong consideration must be given to these elements when applying TOGAF.

Section		Category	Comments
7.3	Inputs	TOGAF Mandated	
7.4	Steps	TOGAF Mandated	
7.5	Outputs	TOGAF Mandated	
8	Phase B: Business Architecture		
8.1	Objectives	TOGAF Mandated	
8.2	Approach	TOGAF Recommended	
8.3	Inputs	TOGAF Mandated	
8.4	Steps	TOGAF Mandated	
8.5	Outputs	TOGAF Mandated	
9	Phase C: Information Systems Architectures		
9.1	Objectives	TOGAF Mandated	
9.2	Approach	TOGAF Recommended	
9.3	Inputs	TOGAF Mandated	
9.4	Steps	TOGAF Mandated	
9.5	Outputs	TOGAF Mandated	
10	Phase C: Data Architecture		
10.1	Objectives	TOGAF Mandated	
10.2	Approach	TOGAF Recommended	
10.3	Inputs	TOGAF Mandated	
10.4	Steps	TOGAF Mandated	
10.5	Outputs	TOGAF Mandated	
11	Phase C: Application Architecture		
11.1	Objectives	TOGAF Mandated	
11.2	Approach	TOGAF Recommended	
11.3	Inputs	TOGAF Mandated	
11.4	Steps	TOGAF Mandated	
11.5	Outputs	TOGAF Mandated	
12	Phase D: Technology Architecture		
12.1	Objectives	TOGAF Mandated	
12.2	Approach	TOGAF Recommended	
12.3	Inputs	TOGAF Mandated	
12.4	Steps	TOGAF Mandated	
12.5	Outputs	TOGAF Mandated	
13	Phase E: Opportunities & Solutions		
13.1	Objectives	TOGAF Mandated	
13.2	Approach	TOGAF Recommended	
13.3	Inputs	TOGAF Mandated	
13.4	Steps	TOGAF Mandated	
13.5	Outputs	TOGAF Mandated	
14	Phase F: Migration Planning		
14.1	Objectives	TOGAF Mandated	
14.2	Approach	TOGAF Recommended	
14.3	Inputs	TOGAF Mandated	
14.4	Steps	TOGAF Mandated	
14.5	Outputs	TOGAF Mandated	

TOGAF Version 9 (2009)

(TOGAF (2009) "TOGAF Version 9" (#G091), Reading, UK: The Open Group)

More Consistency of Output

Previous versions of TOGAF focused on providing a consistent process for developing architectures. TOGAF 9 includes a greatly enhanced consideration of architectural work products to ensure that a consistent process is used to produce consistent outputs. The Architecture Content Framework provides a detailed model of the outputs to be created by the ADM. Additionally, the Enterprise Continuum, Architecture Partitioning, and Architecture Repository sections provide detailed guidance on how architectural deliverables can be scoped, governed, and integrated.

Content Framework and the TOGAF ADM

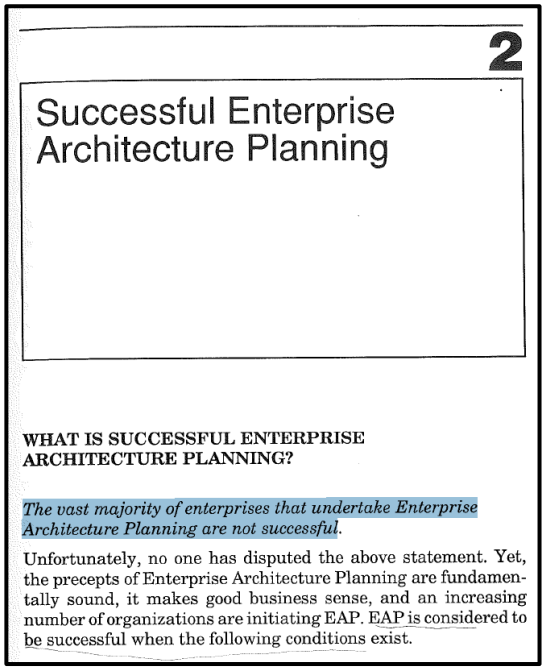
The TOGAF ADM describes the process of moving from a baseline state of the enterprise to a target state of the enterprise. The ADM will address a business need through a process of visioning, architecture definition, transformation planning, and architecture governance. At each stage in this process, the ADM requires information as inputs and will create outputs as a result of executing a number of steps. The content framework provides an underlying structure for the ADM that defines inputs and outputs in more detail and puts each deliverable into the context of the holistic architecture view of the enterprise.

The content framework should therefore be used as a companion to the ADM. The ADM describes what needs to be done to create an architecture and the content framework describes what the architecture should look like once it is done.

TOGAF was positioned as a step-wise methodology

Impracticality of TOGAF

First EA Methodology



2

Successful Enterprise Architecture Planning

WHAT IS SUCCESSFUL ENTERPRISE ARCHITECTURE PLANNING?

The vast majority of enterprises that undertake Enterprise Architecture Planning are not successful.

Unfortunately, no one has disputed the above statement. Yet, the precepts of Enterprise Architecture Planning are fundamentally sound, it makes good business sense, and an increasing number of organizations are initiating EAP. EAP is considered to be successful when the following conditions exist.

(Spewak, S. H. and Hill, S. C. (1992) *Enterprise Architecture Planning: Developing a Blueprint for Data, Applications and Technology*, New York, NY: Wiley)

TOGAF Predecessor

The approach characterized by initiatives such as TAFIM has certainly been the de facto means by which technical architectures are defined but unfortunately labors under some notable flaws:

- The elapsed time required to produce the architecture makes it close to obsolete before completion.
- Architectures of such complexity require specialized and reasonably uncommon IT expertise to complete. The end result is normally incomprehensible to a business-oriented audience and is harder to trace to the business strategy.
- Although an architecture like that produced by DoD is available in the public domain, no specific method is available to guide its development. Hence, ad hoc, piecemeal, or fragmented methods are occasionally misapplied in the name of development.

Perhaps in part due to some of these flaws, the TAFIM was abruptly cancelled, and no public reason has yet been announced for this. Instead, we are led to believe that the Command and Control, Communication, and Computers Intelligence, Surveillance, and Reconnaissance Model (C4ISR) has usurped TAFIM and has been adopted as the new "standard." C4ISR operates under the general aegis of the DISA (Defense Information Systems Agency).

(Perks, C. and Beveridge, T. (2003) *Guide to Enterprise IT Architecture*, New York, NY: Springer)

MIT CISR Research

Most of the effort to define enterprise architecture has been located in companies' IT units. But the historic ineffectiveness of IT architecture efforts in large organizations has troubled us for years. In presentations we have railed against traditional IT architecture efforts for their remoteness from the reality of the business and their heavy reliance on mind-numbing detail represented in charts that look more like circuit diagrams than business descriptions and that are useful as little more than doorstops. All three of

(Ross, J. W., Weill, P. and Robertson, D. C. (2006) *Enterprise Architecture as Strategy: Creating a Foundation for Business Execution*, Boston, MA: Harvard Business School Press)

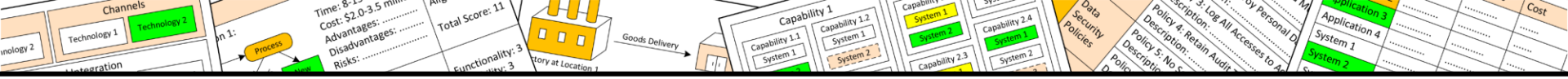
TOGAF as a methodology was <u>not viable</u>

Success of TOGAF

- Hype around the “novel” concept of EA:
  - EA was “invented” by John Zachman in the late 1980s
  - Forgot “systems planning”, switched to “enterprise architecture”
  - Forgot “methodologies”, switched to “frameworks”

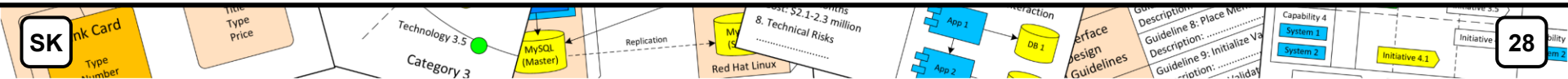
- Proliferation of planning practices:
  - More organizations adopted IT and needed planning

- Marketing efforts of The Open Group:
  - TOGAF was the first “open”, not proprietary, framework
  - Proposed a “franchise” model, so that everyone could join

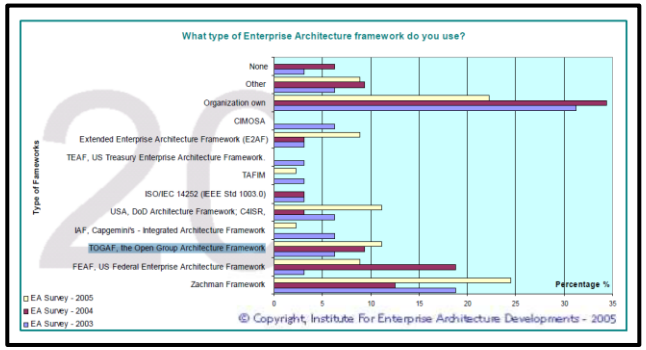


Part IV: TOGAF in Practice

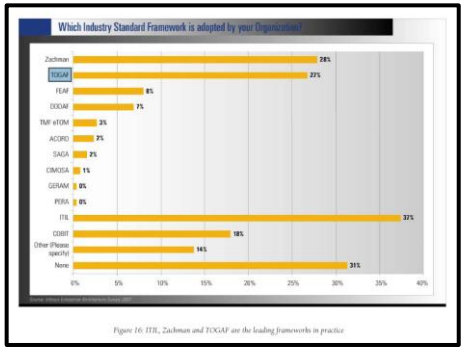
- Declared usage of TOGAF
- Actual usage of TOGAF
- Example of using TOGAF



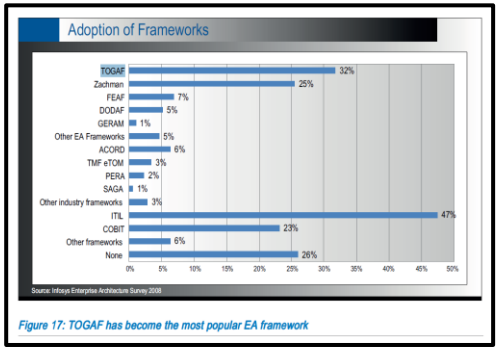
Statistics of TOGAF Usage



(Schekkerman, J. (2005) "Trends in Enterprise Architecture 2005: How Are Organizations Progressing?", Amersfoort, The Netherlands: Institute for Enterprise Architecture Developments (IFEAD))



(Aziz, S. and Obitz, T. (2007) "Infosys Enterprise Architecture Survey 2007", Bangalore, India: Infosys)

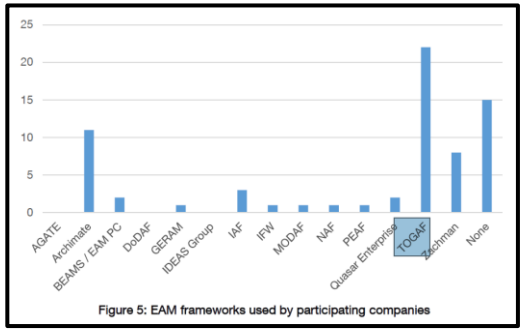


(Obitz, T. and Babu, M. (2009) "Infosys Enterprise Architecture Survey 2008/2009", Bangalore, India: Infosys)

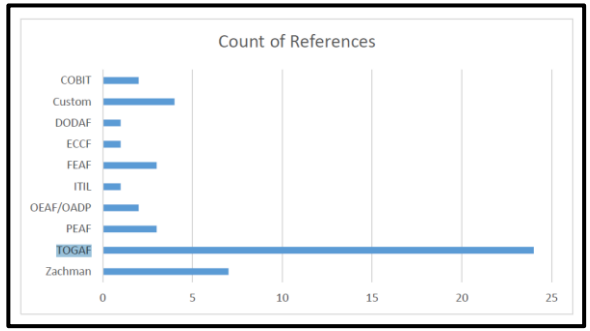
Table 16: Leading Primary EA Frameworks

EA Framework Approach	Number of Responses	% of Participants
The TOGAF Standard	56	20%
DoDAF	6	2%
FEAF	2	>1%
MODAF	0	0%
Gartner	0	0%
Zachman	0	0%
NASCIO	0	0%
Other	7	2.5%

(Cameron, B. H. and McMillan, E. (2013) "Analyzing the Current Trends in Enterprise Architecture Frameworks", *Journal of Enterprise Architecture*, Vol. 9, No. 1, pp. 60-71)



(Schneider, A. W., Gschwendtner, A. and Matthes, F. (2015) "IT Architecture Standardization Survey", Munich, Germany: Software Engineering for Business Information Systems (SEBIS), Technical University of Munich)



(Carr, D. and Else, S. (2018) "State of Enterprise Architecture Survey: Results and Findings", *Enterprise Architecture Professional Journal*, Vol. 6, No. 1, pp. 1-17)

Statistically, TOGAF was indeed "widely used", but...

Adherence to TOGAF

> *TOGAF is the key framework that we use. [However,] we do not use very much of TOGAF at all. ...The key aspect of TOGAF that is really active at the moment is the partitioning. The domain partitioning that we are using follows the TOGAF type of approach.*

(Kotusev, S. (2018) "TOGAF-Based Enterprise Architecture Practice: An Exploratory Case Study", *Communications of the Association for Information Systems*, Vol. 43, No. 1, pp. 321-359)

> *"There's very few people who use the whole ADM but typically people will align their architecture practice at their level of maturity with the relevant aspects of the ADM".*

(Alwadain, A., Fielt, E., Korthaus, A. and Rosemann, M. (2014) "A Critical Realist Perspective of Enterprise Architecture Evolution: Conditioning and Outcomes", *Australasian Journal of Information Systems*, Vol. 18, No. 3, pp. 213-226)

> *No one really works according to TOGAF anywhere. ...If you are too rigidly following TOGAF you would never get anything done. ...You cannot blissfully follow the methodology, but you look at it as a collection of tools that you can use.*

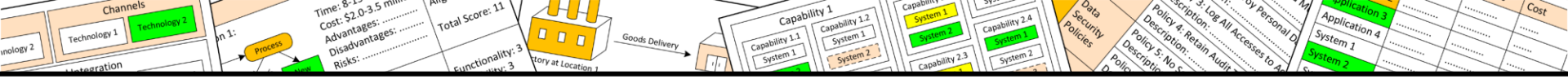
> *My TOGAF instructor did say "The whole point of it is take the framework, modify it to work within your organization and from there you get your version of TOGAF". If there is a bunch of things you do not do, just strike them out. If there is a bunch of things you do differently, just modify them.*

(Kotusev, S. (2018) "TOGAF-Based Enterprise Architecture Practice: An Exploratory Case Study", *Communications of the Association for Information Systems*, Vol. 43, No. 1, pp. 321-359)

> ***Myth 1: Enterprise architecture can be implemented in an organization using a framework (such as the TOGAF® standard) out-of-the-box.***
>
> Enterprise architecture is never implemented wholesale, definitely not "out-of-the-box". Enterprise architecture is carefully *blended* into an organization through a series of well-planned iterations. Organizations start with an open framework like the TOGAF framework, but as it gets customized and tailored, it adapts to an organization's culture to become their own "personalized" enterprise architecture model. As enterprise architecture matures in an organization, the TOGAF framework is still inside and powering their enterprise architecture but no longer very visible.

(Viswanathan, V. (2015) "Four Questions: Vish Viswanathan", *Journal of Enterprise Architecture*, Vol. 11, No. 2, pp. 15-17)

In all cases, the use of TOGAF was purely declarative



TOGAF Case Study

8. Evaluating TOGAF

Our initial assumptions about TOGAF were that it would be a sort of 'methodology' that we could follow to produce our EA, however this turned out not to be the case. In fact, on first examining TOGAF (before the training) our impression was that on the one hand, it is very large and quite daunting, but on the other hand it is very non-prescriptive and flexible, and much of it is optional. It was difficult to see how best to select from or

8.1 TOGAF training

KCL's TOGAF training was slightly different to the other projects in the pilot programme. One team member attended one of the public courses, the other attended the course that was organised specifically for the JISC EA programme. However, whereas we would have expected the course put on for JISC to have been tailored towards an HE audience, our impression from talking to the participant on the public course is that they were not significantly different. In short, the course involved a fairly regimented journey through the documentation, but without realistic examples. We felt it was very business-focused and it was sometimes hard to see the relevance of it to our situation. The ongoing exercise seemed to revolve around a sales- or business-person's presentation to clients, rather than an architectural exercise, and whilst this was relevant to the attendees on the public course (who were mostly EA consultants) we were left feeling that whilst we

8.2 The Open Group

Participation in the JISC pilot programme included a year's membership of The Open Group, at a cost of more than £9,500. It is not clear what membership of The Open Group provides to the college that is worth the cost. The TOGAF material can be downloaded anyway, and is provided as part of the training course. If it weren't for the fact that JISC are funding the membership for this year, it would not have been possible to convince KCL (nor indeed ourselves) that the college should join, and it is doubtful that they will authorise the expenditure next year (nor will we ask them to do so). Although the cost is low for commercial companies, to a university it is not insignificant.

One area in which we were hoping that Open Group membership might have helped us was in the provision of case studies and worked examples, but none were forthcoming.

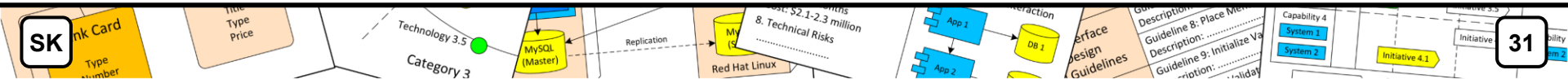
9.1.2 TOGAF and EA

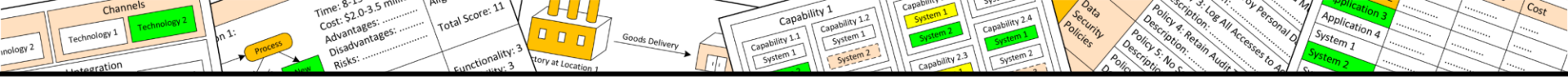
We found TOGAF as it stands to be too generic for our purposes. In particular, it doesn't give sufficient specific or practical information about how to proceed with EA, nor what an EA might look like. Consequently, our main use for it was as a broad framework and vocabulary for representing our architectural work. This may, in fact, be the point of TOGAF, but we would question the need for it to be quite as 'heavyweight' as it is. In short,

1. There is a pressing need for some detailed worked examples and use cases. Although these were requested, they were not forthcoming from TOGAF trainers or The Open Group, possibly because such things are regarded as 'commercial secrets' by companies. The case studies from this programme will be a start, but more detailed and longer-term studies would be very helpful: longer-term so that it covers the entire ADM cycle, and more detailed in that it includes not only the discursive/ analytic document itself, but a full set of

(Anderson, P., Backhouse, G., Townsend, J., Hedges, M. and Hobson, P. (2009) "Doing Enterprise Architecture: Enabling the Agile Institution" (#533), Bristol, UK: Joint Information Systems Committee (JISC))

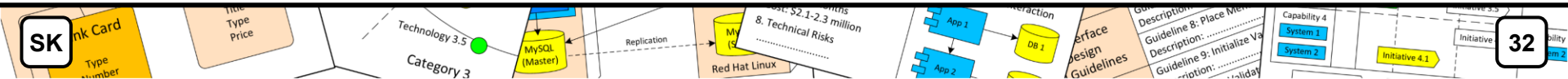
Attempts to use TOGAF only cause confusion





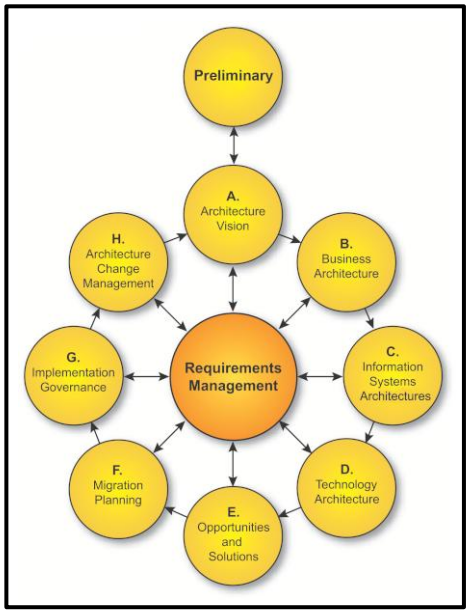
Part V: Development of TOGAF

- Semantic erosion of TOGAF
- Increasing ambiguity of TOGAF
- Rhetorical adaptation of TOGAF



Erosion of TOGAF

Version 9



Version 9.1: Everything Is Optional

- The Document Categorization Model has been removed.

(TOGAF (2011) "TOGAF Version 9.1" (#G116), Reading, UK: The Open Group)

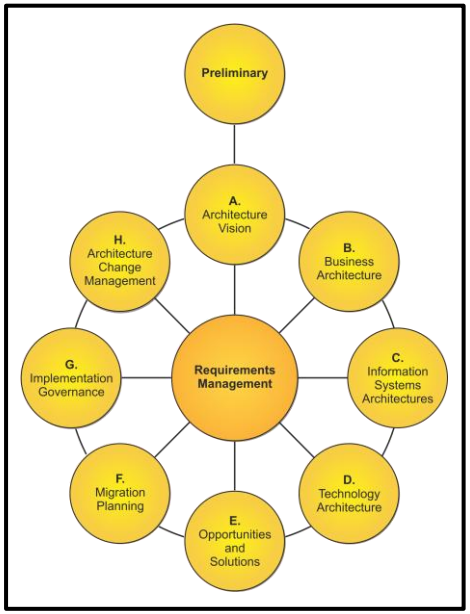
Version 10: Nothing Is Recommended

In particular, the ADM does not:

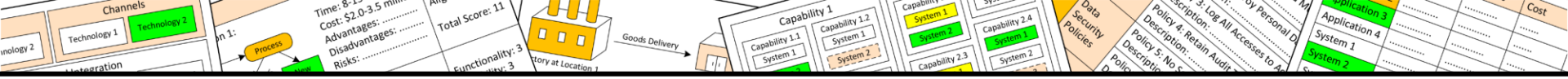
- Mandate that the phases must be performed in any specific sequence
- Mandate a "waterfall" method

(TOGAF v10 (2022) "The TOGAF Standard: Introduction and Core Concepts" (#C220), Reading, UK: The Open Group)

Version 10



TOGAF rejects any specific suggestions



Ambiguity of TOGAF

Process/Sequence

Architecture Development Method

The TOGAF Architecture Development Method (ADM) provides a tested and repeatable process for developing architectures. The ADM includes establishing an architecture framework, developing architecture content, transitioning, and governing the realization of architectures.

(TOGAF v10 (2022) "The TOGAF Standard: Introduction and Core Concepts" (#C220), Reading, UK: The Open Group)

- **Process Tailoring**: the TOGAF ADM provides a generic process for carrying out architecture

(TOGAF v10 (2022) "The TOGAF Standard: Architecture Development Method" (#C220), Reading, UK: The Open Group)

Summary

The TOGAF ADM defines a recommended sequence for the various phases and steps involved in developing an architecture, but it cannot recommend a scope — this has to be determined by the organization itself, bearing in mind that the recommended sequence of development in the ADM process is an iterative one, with the depth and breadth of scope and deliverables increasing with each iteration. Each iteration will add resources to the organization's Architecture Repository.

(TOGAF v10 (2022) "The TOGAF Standard: Architecture Development Method" (#C220), Reading, UK: The Open Group)

Not Process/Sequence

The TOGAF ADM should not be understood as a processes model. The ADM graphic is a stylized representation showing essential information flows and is not a representation of activity sequence.

(Hornford, D., Hornford, N., Sabesan, S., Scotch, S., Street, K. and Toder, S. (2022) "TOGAF Series Guide: A Practitioners' Approach to Developing Enterprise Architecture Following the TOGAF ADM" (#G186), Reading, UK: The Open Group)

Mapping the EA Leader's Guide to TOGAF ADM Phases

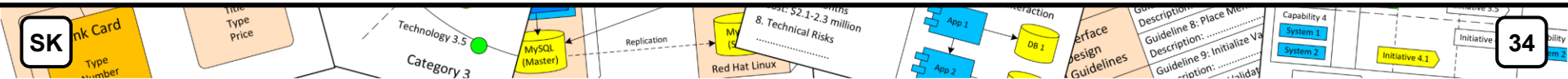
The Preliminary Phase is designed as a customized journey of the TOGAF ADM. This journey is predicated on the best practice of developing EA. The ADM is not a linear process model: rather it is a logical method that places key activity steps together for the purpose of understanding the relationship of activity and clarifying information flow. In Table 9 several TOGAF ADM phases are entered iteratively. Partial indicates work only to the extent needed to answer the question at hand. More elaboration can be done in subsequent architecture work.

(Hornford, D., Hornford, N., Sabesan, S., Scotch, S., Street, K. and Toder, S. (2022) "TOGAF Series Guide: The TOGAF Leader's Guide to Establishing and Evolving an EA Capability" (#G184), Reading, UK: The Open Group)

As described in the previous section, TOGAF ADM phases do not have to proceed in sequence. The activities around defining Segment Architectures can start as soon as the relevant areas have been identified in the Strategic Architecture. Even if not all of these segments have been defined,

(Frost, C. (2022) "TOGAF Series Guide: Enabling Enterprise Agility" (#G20F), Reading, UK: The Open Group)

TOGAF is whatever you prefer to see



Rhetoric of TOGAF

Version 9 (2009): Service-Oriented Architecture (SOA)

- The linkages between the TOGAF ADM and Service Oriented Architecture (SOA)

(TOGAF (2009) “TOGAF Version 9” (#G091), Reading, UK: The Open Group)

Version 9.2 (2018): Business Architecture

- The Architecture Vision and Business Architecture phases feature extended guidance on development of the Business Architecture; this includes focus on Business Capabilities, Value Streams, and Organization Maps

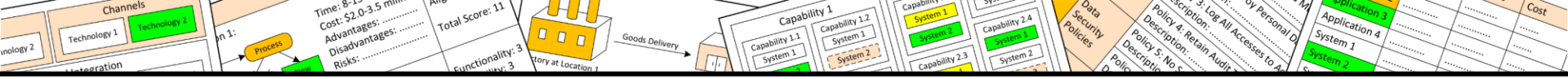
(Josey, A. (2018) “An Introduction to the TOGAF Standard, Version 9.2” (#W182), Reading, UK: The Open Group)

Version 10 (2022): Agile and Digital Transformation

Building on over twenty-five years of development and constant input from the forum’s global community of EA thought leaders, the TOGAF® Standard, 10th Edition expands the material available to architecture practitioners to make adoption of best practices easier. With greatly expanded guidance and “how-to” material, it enables organizations to operate in an efficient and effective way across a broad range of use-cases, including Agile enterprises and Digital Transformation.

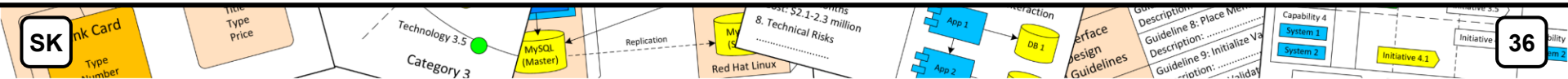
(The Open Group (2022) “The Open Group Announces Launch of the TOGAF Standard, 10th Edition”, The Open Group, URL: https://www.opengroup.org/open-group-announces-launch-togaf-standard-10th-edition)

TOGAF embraces all the “hottest” topics



Part VI: Status of TOGAF

- Complete meaninglessness of TOGAF
- Reasons for TOGAF's popularity
- Parties that benefit from TOGAF
- People who support TOGAF



Essence of TOGAF

- Just a five-letter word, no longer an acronym
- Up to 1800 pages of unintelligible, incoherent text:
  - No clear scope, only a loose bunch of PDF files
  - No specific suggestions, everything is optional
  - Unfalsifiable, can be neither proven nor disproven
  - Whatever you like, e.g. project, process, sequence, or not
  - “Using it” means simply “reading it” or “getting certified”
- Rich toolkit, of which no specific tools are useful

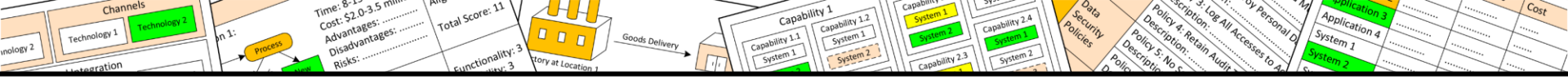
- TOGAF is only an empty <u>symbol</u>:
  - Has no concrete substance in practical terms
  - Emblem that indicates belongingness to the community

Attractiveness of TOGAF

- Promises of proven best practices:
  - Unspecifiable “fundamentals” of enterprise architecture
- Assertive but elusive positioning:
  - Global “standard”, so it is important and cannot be ignored
  - Only “framework”, so it cannot be blamed for any failures
- Reassuring, encouraging rhetoric:
  - Supports everything: SOA, Cloud, Agile, Digital, AI, etc.
- Win-win bandwagon for all salesmen:
  - Real and “snake oil” trainings, certificates, tools and consulting
- Institutionalization in the field:
  - Improves CVs and indicates the desire for growth
  - Helps pass HR filters and qualify for positions

Beneficiaries of TOGAF

- Not EA practitioners:
  - Gives no knowledge as best practices were never there
  - Promotes misinformation and impractical approaches
- Real beneficiaries:
  - The Open Group, e.g. selling badges
  - Affiliated trainers, e.g. selling trainings
  - Certification centers, e.g. selling certificates
  - Other salesmen
- TOGAF is a contraption for attracting incomes



Supporters of TOGAF

- Salesmen of all sorts:
  - Commercially motivated to praise TOGAF
  - Invest in marketing using various deceptive tricks
- Aspiring enterprise architects:
  - Indoctrinated by salesmen to believe in TOGAF
  - Unaware of practical realities and cannot question TOGAF
- Zealots and fanatics:
  - Believe in TOGAF in defiance of any evidence
  - Wrongly attribute plain common sense to TOGAF
  - Speak in a convoluted fashion using abstract terms