Foreword

The reasons one would "do" architecture for *anything* are two: a) complexity and b) change.

If the object you are trying to create is simple … that is, if, at a glance, you can see it in its entirety, at the level of definition that is required to create it … and if it is not likely to change appreciably over the period of its existence … then, you don't need architecture. You need a tool (a machete) … some material (some grass) … some time … and then … chop down grass … build a grass shack.

If, on the other hand, the object you are trying to create so complex that you cannot see it in its entirety at the level of definition required to create it … like an Airbus 380 … then forget the machete and grass … and it doesn't make any difference what tools you have, what material you have and how much time you have, you are not going to be able to create an Airbus 380. In this case, you NEED Architecture … that is, you have to be able to describe the object in order to create it.

If you can't describe the object you are trying to create at the level of definition required to create it, you can't create it … I don't really care how big or small, how simple or complex, what it's made of or what it is … a hundred story building, a locomotive, a super computer, an Airbus 380 … or an enterprise.

After you get the Airbus created and the price of oil goes up out of sight and the mobility of the population increases, and you want to change it to carry more passengers with greater fuel efficiency, how would you do that? You have to go back to the architectural descriptions that were produced in order to create it to begin with and that constitutes the baseline for changing it … that is, they are the baseline for changing the object IF they have been maintained to reflect any changes that have been made to the object instances.

If you want to change the object you have created and no architectural representations exist, then you have only three options: a) you can just make the changes required … like, change the jet turbines to nuclear engines, add a hundred seats, replace the aluminum surfaces with composites, etc. … and then try it and see if it will still work; or b) you can reverse engineer the architectural representations from the operating instance … like, disassemble the Airbus into its parts, with your micrometers measure every part to operating clearances, understand how the parts fit together, write it all down and then make the needed changes; or, c) scrap the existing instantiation and build a new one from scratch. These are the three possibilities for changing an object once it is created when the architectural representations have not been retained or maintained or if they were never produced in the first place.

In short, the reasons you do architecture have to do with complexity and change. Nothing magic is happening and nothing is happening by accident. The laws of nature are constant and there is no way to circumvent them.

I would submit that the modern Enterprise is the most complex object yet conceived of by humankind. Enterprises are far more complex than Airbus 380's! And … an enterprise doesn't have to be all that big to be extremely complex.

I would observe that very many enterprises, and many of them very large enterprises, already exist. Where is all the enterprise architecture? I submit, the enterprises that are in existence today typically were never engineered. There is no enterprise architecture. The enterprises actually were never designed … they simply happened, one grass shack at a time. It is little wonder that enterprises, in general, don't work very well, are not very efficient and are very difficult to change. The problem comes after you have several square miles of grass shacks and the external environment changes to require a hundred story building. One more grass shack is not going to fix the problem.

I have been mixing the metaphor between enterprises and buildings but I hope the point is clear … the two reasons you need architecture for anything are complexity and change and there is not going to be a substitute for architecture.

I would also observe that public sector enterprises tend to be of the extreme complex variety. In the public sector, there is a wide variety of products and services. There also potentially is some common infrastructure to manage like finances, employment, land, administration. The public sector Enterprise typically decentralizes the products and services and centralizes the infrastructure management. The political issue tends to be who controls what which adds another dimension to the complexity.

When the environment becomes more demanding, that is the consumers demand more and better products and services and the suppliers have less available resources; and in the public sector, the consumers and the suppliers are basically, one in the same; it creates a very tenuous situation where something has to change. My opinion is, the issues of enterprise architecture are fundamental to ongoing stability of operation. How else are you going to dramatically improve the delivery of products and services and accomplish this with only the resources that are presently available? You only have to read the daily newspapers to find the public sector enterprises that are failing in this regard and not performing effectively.

In the private sector, the worst possible thing that can happen to an enterprise if it becomes dysfunctional, that is, if it can no longer produce marketable products or services with the available resources, is that it just goes out of business. In the public sector, when enterprises go dysfunctional, there are all kinds of problems: political problems, environmental problems, economic problems, emotional problems, sociological problems, in addition to going out of business!

Advances in Government Enterprise Architecture could not appear at a better time. We need the most advanced thinking humanly possible at this juncture in history. I have devoted nearly 40 years of my professional life to the subject of Enterprise Architecture. Tragically, the great preponderance of people in the world seem to still be searching for the holy grail, the quick fix, the "silver bullet", a technological panacea. My observation is, actual work is going to have to take place, engineering style of work, enterprise engineering work. Writing more code is NOT going to fix the problem and I don't care how much more code is written. The enterprise is going to have to be engineered and the "raw material" for doing engineering work is the set of descriptive representations that constitute the "architecture" for the object being engineered, in this case, the enterprise, in fact the public sector, government enterprise.

Enterprise architecture may well be the issue of the century. In fact, in 1999, I wrote an article by that name, "Enterprise Architecture: The Issue of the Century" in which I argued this case. In this short foreword, I hope I have convincingly established that enterprise architecture for public sector enterprises is especially critical.

It is comforting to know that there are some number of people giving the subject of enterprise architecture, particularly in its manifestation in the public sector, serious thought. As I mentioned above, we need all of the good thoughts and energy possible focused on this critical subject.

I appreciate Pallab Saha's effort to pull together this collection of material. I know the time and effort he has spent will benefit all of us immensely. I have encouraged Pallab before never to give up … to continue his good work. I hope this is only the beginning of a lot more advances in government enterprise architecture. And, in this simple foreword, I hope I have encouraged concentrated focus on the enterprise, not simply the systems or the technologies of the enterprise … but on THE ENTERPRISE, the government enterprise in particular.

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John A. Zachman *is the originator of the Framework for Enterprise Architecture which has received broad acceptance around the world as an integrative framework, or "periodic table" of descriptive representations for enterprises. John is not only known for this work on enterprise architecture, but is also known for his early contributions to IBM's Information Strategy methodology (Business Systems Planning) as well as to their executive team planning techniques (Intensive Planning). He retired from IBM in 1990, having served them for 26 years. He presently is chairman of the board of Zachman Framework Associates, a worldwide consortium managing conformance to the Zachman Framework principles. He is chief executive officer of the Zachman Institute for Framework Advancement (ZIFA), an organization dedicated to advancing the conceptual and implementation states of the art in EA. He also operates his own education and consulting business, Zachman International (www.ZachmanInternational.com). John serves on the Executive Council for Information Management and Technology (ECIMT) of the United States Government Accountability Office (GAO). He is a fellow for the College of Business Administration of the University of North Texas. He serves on the advisory board for the Data Resource Management Program at the University of Washington and on the advisory board of the Data Administration Management Association International (DAMA-I) from whom he was awarded the 2002 Lifetime Achievement Award. He was awarded the 2004 Oakland University, Applied Technology in Business (ATIB), Award for IS Excellence and Innovation. John has been focusing on EA since 1970 and has written extensively on the subject. He is the author of the book, The Zachman Framework for Enterprise Architecture: A Primer on Enterprise Engineering and Manufacturing. He has facilitated innumerable executive team planning sessions. He travels nationally and internationally, teaching and consulting, and is a popular conference speaker, known for his motivating messages on Enterprise Architecture issues. He has spoken to many thousands of enterprise managers and information professionals on every continent. In addition to his professional activities, John Zachman serves on the Elder Council of the Church on the Way (First Foursquare Church of Van Nuys, California), the board of directors of Living Way Ministries, a radio and television ministry of the Church on the Way, the president's cabinet of the King's College and Seminary, the board of directors of the Los Angeles Citywide Children's Christian Choir and on the board of directors of Native Hope International, a Los Angeles-based ministry to the Native American people. Prior to joining IBM, John served as a line officer in the U.S. Navy and is a retired commander in the U.S. Naval Reserve. He chaired a panel on "Planning, Development and Maintenance Tools and Methods Integration" for the U.S. National Institute of Standards and Technology. He holds a degree in chemistry from Northwestern University, has taught at Tufts University, has served on the board of councilors for the School of Library and Information Management at the University of Southern California, as a special advisor to the School of Library and Information Management at Emporia State University, and on the advisory council to the School of Library and Information Management at Dominican University.*