We welcome the arrival of a book titled *Code Halos* from Wiley India and present here a brief review of this thought provoking book for all those who are concerned with the new age economy, changing nature of business and survival in the new world created by the digital disruption happening all around us. The book is described as a *Playbook for Managers*. It is written by three authors Malcolm Frank, Paul Roehrig and Ben Pring who are the men behind Cognizant’s Center for Future of Work. Based on the insight they have gathered through the years of their experience of engaging with various clients for helping them create business advantage with the available new technologies, they see a kind of significant pattern emerge, which they name as Code Halo Solutions and present in this book a framework that is useful for all types of businesses and people who intend to start and win their digital journey in years to come.

The term Code Halo is defined as the field of information that surrounds any noun – any person, place or thing. Authors describe the word “halo” as the one that refers to the data that accumulates around people, devices and organizations, to the data that is robust, powerful and continually growing in richness and complexity. There is “code” contained in these *halos* and authors go about explaining how companies, brands, employers and partners can use it for enhancing their understanding of people and objects more deeply, since it is not easy to decode the information within the invisible field. Authors write about how new business models that are commercially viable can be created out of the knowledge gained and state that this simply cannot happen automatically.

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The book has three parts – first part is all about Digits over Widgets. In this part it is explained how handful of companies - like *Amazon, Apple, Facebook, Google, Netflix* and *Pandora* - collectively generated $1 trillion of market value during the past decade by leveraging consumer technologies in new ways. They transformed customer expectations, established new operating models and violently disrupted about a dozen mature industries – such as Nokia, Motorola, Borders, Barnes & Noble, AOL, Blockbuster, HMV and so on – who lost on average more than 90% of their 2003 enterprise value. Authors assign the success of the trillion-dollar club to the common denominator that is at the heart of the business models of these new age companies and that is : the creation and management of Code Halos.

Next they go onto introducing the **SMAC Stack**, which is the foundation that makes creation of Code Halos possible. The SMAC Stack has four components viz. *Social, Mobile, Analytics and Cloud* which provide the infrastructure for the Code Halo economy. While explaining the importance of the rich customer experience created by new age companies, authors give an example of a local bank where you might be a customer for 15 years and upon inserting your ATM bank card, the first thing you see is *Press 1 for English, Press 2 for …* etc. The sophisticated financial institution which claims to be your partner does not know what language you speak. They help you carry out your financial transactions and would have record of all of their details but do not know what language you speak. They only know that what is in their system of records rather than what is in your Code Halo. It feels that they don’t know you and your real financial life. This is an example of how traditional business is unaware of the Code Halos surrounding people. This is but natural because mere deployment of SMAC Stack of technologies is not sufficient. Creating Code Halos and deriving meaning out of them requires their integration into well-codified and well-understood business processes – such as sales, customer service, research & development or supply-chain management.

In the light of this, authors describe five business code halos viz. Customer, Product, Employee, Partner and last but not the least Enterprise itself. Customer Code Halo is important for relationship building while Product Code Halos help shift value from Widgets to Digits which is becoming richer due to Internet of Things. Employee Code Halos provide new ways for team members to connect and solve problems, while Partner Code Halos are weavers of webs. The Enterprise Code Halo is an aggregate of four other code halos and hence a Brand aggregator. Creating winning Code Halo Solutions is far more than just deploying one or two elements of SMAC Stack technologies and hence authors devote a complete chapter to discuss the anatomy of a winning code halo solution. They state that 5 elements are essential for such a solution viz. – Amplifier, Application Interface, Algorithm, Data and Business model. Authors provide numerous examples based on trillion-dollar club organizations to explain in detail the meaning of these five elements. In the process they provide four anatomy lessons and also explain what should not be done and provide examples of failure as well such as say Microsoft *Zune*.

While explaining the key importance of SMAC Stack, authors compare it with steam power, steel and electricity which fueled the
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industrial corporate model, and inform that the new technology stack is providing the foundation for knowledge corporate model. In coming five years they suggest that organizations of all sizes will need to develop mastery of SMAC technologies, which is easier said than done. They address the problem of making sense of this new wave of technology to seize competitive advantage by providing historical perspective of corporate computing to see where and how the SMAC model fits today; by providing overview of current SMAC technologies and their pervasiveness and describing view of how this model is already upending several established industries. So far as historical perspective is concerned they place the SMAC stack in the fifth wave of corporate IT – mainframe (1960-76), minicomputer (1976-92), client/server (1992-2002) and Internet PC (2002-12) being the first four waves. Each wave had a “killer” technology application such as general ledger with mainframe, ERP with client/server and eCommerce with the Internet PC. Each wave is represented as “S” curve since business productivity which these technology models created in the form of cost savings, revenue generation, or productivity gains would form an S shape over time. One key message that authors give is that these technologies need to be deployed in an integrated manner in order to create the technology architecture for the new age business since SMAC stack’s power and value only comes when these technologies work in harmony. They are not simply glued onto traditional corporate model but in many cases they are creating entirely new business model. Authors provide examples of Wikipedia over Encyclopedia Britannica and Craigslist over newspaper ads to elaborate the impact of the power of appropriate implementation of SMAC stack.

While explaining how and where Code Halo solution concepts apply to an organization, and where they can find a starting point, authors provide an answer in the form of Crossroads Model which they have developed based on their research findings and their consulting work with many leading companies. For any organization starting on the digital journey, while external factors like nature of their products and/or services, industry structure, and customer base’s demographics do have an impact on next steps to be taken, the internal factors like organization culture (does it support change?), IT team (is it strong having right capabilities?) and organization’s execution capability also play a role. Authors explain the five stages of the Crossroads model for winning with Code Halos viz. – Ionization (fertile context for innovation), the Spark (where Code Halos emerge in an industry), Enrichment (when the code Halo solutions scale) and the Crossroads (where markets flip). They provide examples to explain Crossroads model across multiple industries.

Last chapter in the first part of the book is devoted to Code halo Economy where economics of information is explained. Although one might be excited about bringing Code halos to the organization, important questions to ask are what is it going to cost and what financial returns can be expected for the organization. To understand Code Halo economics, authors collaborated with Oxford Economics and futurist Thornton May to survey 300 Global 2000 corporations and interviews were conducted with leading companies in insurance, banking and financial services, healthcare, life sciences, technology, consumer goods/retail, manufacturing and communications/media across the US, UK, Germany and France. Authors found through this research that among those who participated in their research, investment in business analytics yielded an average 8.4% increase in revenues and an average of 8.15% improvement in cost reductions in last financial year – resulting in $766 billion in economic benefit over the previous year. This indicates how meaning makers are winning based on code. Thus authors predict that separating ‘Signal’ from ‘Noise’ will be the killer business skill over the next decade. This chapter provides information on how to make meaningful returns.

While people and organizations are still creating map for the way forward, authors claim that they already know a lot about what works and what does not and provide advice on some critical rules to follow so that the chances of success significantly increase. Part II of the book has four chapters explaining four principles of success in the Code Halo Economy. These are - Delivering beautiful products and experiences, Not being evil (Earning and keeping trust in the transparent world), Managing your career based on Code (Winning in the Wierarchy) and finally Making IT your Halo Heroes (in short Transforming your Technology Organization). Chapter on “Not being Evil” is especially important for all those people who are frightened by the sudden threat to privacy of data and various vulnerabilities of the virtual world, which apparently make it fragile. The chapter puts the dark side of the digitized world into a certain context by providing an example of automobiles - e.g. they discuss that over the past century we have come to a point of equilibrium with cars, balancing the benefits with the inherent risks. As awful as car-associated crime is, we accepted a certain level of carjackings, drive-by shootings, smuggling, drunk-driving accidents, road rage and basic car theft as part of downside of personal transportation. We don’t live in the fear of our cars as we have learnt how to manage the risks. In the same manner, we need not be afraid of the reducing level of privacy and many threats of the virtual world but we should learn to balance the risks and gain from the benefits of digital revolution. The chapter also talks about how the meaning of privacy is evolving in the new age and why the law will never be able to catch up with the changing world. The chapter provides advice on how action can be taken to avoid evil, and what organizations can do to build trust among their customers.

Changing structure of organization in the digital world is termed as Wierarchy as against Hierarchy and authors provide advice on how to manage one’s career in this new flattened structure. Finally they provide advice for aligning IT along three horizons – extend and defend core businesses, build emerging businesses and third creating viable options. In addition to aligning IT, two more critical suggestions are provided for IT departments – one to fund their own transition and second to tear down the wall between the IT and the business.

The third part of the book provides more tactical details for the Crossroads model and how to apply it to organization’s challenges and opportunities. There is a chapter telling on how to seize advantage during ionization by sensing, innovating and preparing to pilot. Next there is a chapter which talks about creating a spark by piloting the best Code Halo solution and another chapter on enriching and scaling at Internet speed which helps turn a spark into a blaze and finally a chapter that provides insight on winning in the new code rush. There are detailed instructions in each chapter on how to go about achieving this. In the conclusion, authors say that by 2020, much will change and ultimate success will require open mind, perseverance and courage. They make a strong argument that very existence of organization’s business can become difficult if the organization does not venture to adopt data and analytics. With this book authors have provided clues on how to ride the new wave of digital disruption confidently and affirmatively.

The book is a must read for variety of readers ranging from those in business as well as those who intend to manage their careers in the new age economy as the book is all about understanding the Future of Business which is being shaped by ever growing digitization. It provides food for thought and for debates on a variety of topics like how to deploy the new age technologies in the best possible manner, new meaning of data privacy, transformation of IT organizations, need of new age regulations and so on.