

The Global Uav Market 2015 2025

This issue of Proceedings gathers papers presented at XOVETIC2019 (A Coruña, Spain, 5-6 September 2019), a conference with the main goal of bringing together young researchers working in big data, artificial intelligence, Internet of Things, HPC(High-performance computing), cybersecurity, bioinformatics, natural language processing, 5G and others areas from the field of ICT (Information Communications Technology), and offering a platform to present the results of their research to a national audience in Galicia and north of Portugal. This second edition aims to serve as the basis of this event, which will be consolidated over time and acquire international projection. The conference is co-funded by Xunta de Galicia and European Union. European Regional Development Fund (ERDF).

Titanium for Consumer Applications is the first book to tie together the metallurgical advantages of titanium in consumer applications. The book begins with a discussion of the metallurgy and properties of titanium that is followed by six distinct sections that look at the use of titanium in consumer products, the sports industry, buildings and architecture design, arts field, aerospace, automotive, and medical applications. This book is useful for individuals involved in the manufacturing of titanium components, as well as those looking to define new applications for this versatile metal. Presents an understanding of the applications of titanium in consumer industries Discusses the properties of titanium and their unique benefits in consumer applications Reviews potential further applications of titanium within the consumer industry

This book offers comparative insights into the challenges and opportunities surrounding emerging technology and the internet as it is used and perceived throughout the world, providing students with cross-cultural and cross-national perspectives. The United Arab Emirates has a national goal of colonizing Mars by 2117, and China seeks to modernize its entire manufacturing process to produce cutting-edge technologies and research advances by 2025. How are other countries using the internet and emerging technologies to their advantage? This volume in the Global Viewpoints series examines 10 issues pertaining to the internet and technology, including access and censorship, alternative energy technologies, artificial intelligence, autonomous robots, cyberbullying, cybercrime, e-learning, GMO's, online privacy, and virtual and augmented reality. For each topic, the volume features eight country-level perspectives that span the world to allow for comparisons of different nations' specific approaches to the technology or issue. This encyclopedia takes a new direction in understanding the importance and impact of emerging technologies on the world, showing that even when experiencing similar technologically related challenges or advances, these technologies do not form one-size-fits-all solutions for every nation and population. Even when nations develop similar technologies, human dimensions, from policy to social norms to culture, influence people and society across the world too. Shows the similarities and differences of emerging issues and successes surrounding technology development through perspectives from different world regions, allowing readers to make comparisons among the featured countries in each section Provides a brief primer on each technology and internet-related issue that functions as a baseline for each section Highlights that different countries and populations having similar societal needs often need to make dissimilar technology-related choices, usually due to varying internal and external pressures ranging from social values and political systems to economic needs and developmental goals Includes photographs that help to illuminate the text

Intermediate Accounting, 12th Edition, Volume 1, continues to be the number one intermediate accounting resource in the Canadian market. Viewed as the most reliable resource by accounting students, faculty, and professionals, this course helps students understand, prepare, and use financial information by linking education with the real-world accounting environment. This new edition now incorporates new data analytics content and up-to-date coverage of leases and revenue recognition.

RAND Corporation researchers assessed the impact that certain remotely piloted aircraft (RPA) governed by the Missile Technology Control Regime (MTCR) have on U.S. national security interests. In this report, they document their findings.

This book provides different engineering, management, economic solutions and methodologies regarding sustainable aviation, giving readers a great sense of how sustainable aviation works at the “systems” level. The aviation industry is one of the fastest growing in the world and can make a positive contribution to sustainability. This book presents environmental policies and their application to the aviation industry and evaluates solutions provided to address pollution. Chapters discuss novel technologies that the aviation industry can apply to reduce its environmental impact and become more energy efficient.

This ground-breaking book offers an extensive legal analysis-grounded in public, EU, and international law-of arms trade regulation, integrated with insights drawn from international relations. The sale of weapons and related technologies is, globally, one of the most politically controversial and ethically contentious forms of commerce. Intimately connected with sustaining repressive governments and violations of international human rights and humanitarian law, arms exports are also a central element in the economic and strategic policies of the governments of all large industrial states. They have also been the source of abundant corruption, and of serious challenges to the norms and effectiveness of constitutional accountability in democratic states. On paper, the arms trade is heavily regulated: national legislation and international treaties are in place which purport to prohibit certain transactions and limit others. Yet despite its importance, legal and international relations scholarship on the subject has been surprisingly limited. This book fills this gap in the literature by examining and comparing the export control regimes of eight leading nations - USA, Russia, the UK, France, Germany, Sweden, China, and India - with chapters contributed by leading experts in the field of law and international relations.

This volume responds to the growing interest in adopting aerial robots (UAVs, or drones) for agricultural crop production, which are revolutionizing farming methods worldwide.

The book provides a detailed review of 250 UAVs that examines their usefulness in enhancing profitability, yield, and quality of crop production. Recent trends indicate an increase in agricultural drone production and use. Millions of dollars have been invested in start-ups that produce agro-drones in the past several years. North America, Europe, China, and the Far East have excelled in offering a large number of UAV models. Some of them are versatile, a few are specific, and many of them are low cost. With so many drone models (over 1200) available, how do farmers and agricultural specialists choose the models best for them? This compendium examines the most useful drones and provides the pertinent details about each drone, its producer, cost incurred, and its pros and cons. It covers their technical specifications, suitability for various purposes, previous performances in farms, and possible benefits to farmers. It covers fixed-wing drones, fixed-winged (hybrid) VTOL helicopters, multi-copters, tilted-wing drones, etc. The book includes a few drones meant more for military or other purposes (e.g. recreation/fun) but that could be easily modified and adapted for the farming sector. The reviews compare activities among the UAVs, such aerial imagery of crops, ability to provide spectral analyses to collect useful data about a crop's growth patterns, and how they can be used to gauge crop canopy temperature (i.e. water stress index), determine grain maturity, and much more.

The goal of Introduction to Information Systems is to teach all business majors, especially undergraduates, how to use information technology to master their current or future jobs and to help ensure the success of their organization. To accomplish this goal, this text helps students become informed users; that is, persons knowledgeable about information systems and information technology. The focus is not merely placed on learning the concepts of information technology, but rather on applying those concepts to facilitate business processes. The content concentrates on placing information systems in the context of business, so that students will more-readily grasp the concepts presented in the text. The theme of this book is What's In IT for Me? This question is asked by all students who take this course. The book will show you that IT is the backbone of any business, whether a student is majoring in Accounting, Finance, Marketing, Human Resources, or Production/Operations Management.

In the battle for the streets of Mosul in Iraq, drones in the hands of ISIS terrorists made life hell for the Iraq army and civilians. Today, defense companies are racing to develop the lasers, microwave weapons, and technology necessary for confronting the next drone threat. Seth J. Frantzman takes the reader from the midnight exercises with Israel's elite drone warriors, to the CIA headquarters where new drone technology was once adopted in the 1990s to hunt Osama bin Laden. This rapidly expanding technology could be used to target nuclear power plants and pose a threat to civilian airports. In the Middle East, the US used a drone to kill Iranian arch-terrorist Qasem Soleimani, a key Iranian commander. Drones are transforming the battlefield from Syria to Libya and Yemen. For militaries and security agencies—the main users of expensive drones—the UAV market is expanding as well; there were more than 20,000 military drones in use by 2020. Once the province of only a few militaries, drones now being built in Turkey, China, Russia, and smaller countries like Taiwan may be joining the military drone market. It's big business, too—\$100 billion will be spent over the next decade on drones. Militaries may soon be spending more on drones than tanks, much as navies transitioned away from giant vulnerable battleships to more agile ships. The future wars will be fought with drones and won by whoever has the most sophisticated technology.

This expansive reference on the use of clean energy technologies in the aviation industry focuses on tools and solutions for maximizing the energy efficiency of aircrafts, airports, and other auxiliary components of air transit. Key topics range from predicting impacts of avionics and control systems to energy/exergy performance analyses of flight mechanics and computational fluid dynamics. The book includes findings both from experimental investigations and functional extant systems, ranging from propulsion technologies for aerospace vehicles to airport design to energy recovery systems. Engineers, researchers and students will benefit from the broad reach and numerous engineering examples provided.

The aviation industry is being transformed by the use of unmanned aerial vehicles, or drones – commercially, militarily, scientifically and recreationally. National regulations have generally failed to keep pace with the expansion of the fast-growing drone industry. Aviation Law and Drones: Unmanned Aircraft and the Future of Aviation traces the development of aviation laws and regulations, explains how aviation is regulated at an international and national level, considers the interrelationship between rapidly advancing technology and legislative attempts to keep pace, and reviews existing domestic and international drone laws and issues (including safety, security, privacy and airspace issues). Against this background, the book uniquely proposes a rationale for, and key provisions of, guiding principles for the regulation of drones internationally – provisions of which could also be implemented domestically. Finally, the book examines the changing shape of our increasingly busy skies – technology beyond drones and the regulation of that technology. The world is on the edge of major disruption in aviation – drones are just the beginning. Given the almost universal interest in drones, this book will be of interest to readers worldwide, from the academic sector and beyond.

As with other transportation methods, safety issues in aircraft can result in a total loss of life. Recently, the air transport industry has come under immense scrutiny after several deaths occurred due to aircraft design and airlines that allowed improperly inspected aircraft to fly. Spacecraft too have found errors in system software that could lead to catastrophic failure. It is imperative that the aviation and aerospace industries continue to revise and refine safety protocols from the construction and design of aircraft, to secure and improve aviation systems, and to test and inspect aircraft. The Research Anthology on Reliability and Safety in Aviation Systems, Spacecraft, and Air Transport is a vital reference source that examines the latest scholarly material on the use of adaptive and assistive technologies in aviation to establish clear guidelines for the design and implementation of such technologies to better serve the needs of both military and civilian pilots. It also covers new information technology use in aviation systems to streamline the cybersecurity, decision making, planning, and design processes within the aviation industry. Highlighting a range of topics such as air navigation systems, computer simulation, and airline operations, this multi-volume book is ideally designed for pilots, scientists, engineers, aviation operators, air traffic controllers, air crash investigators, teachers, academicians, researchers, and students.

The book contains diverse topics such as stock valuation, risk management, gender diversity, work place spirituality, consumer behaviour, etc.

This book is an everything-included approach to understanding drones, creating an organization around using unmanned aircraft, and outlining the process of safety to protect that program. It is the first-of-a-kind safety-focused text book for unmanned aircraft operations, providing the reader with a required understanding of hazard identification, risk analysis, mitigation, and promotion. It enables the reader to speak the same language as any civil aviation authority, and gives them the toolset to create a safety risk management program for unmanned aircraft. The main items in this book break down into three categories. The first approach is understanding how the drone landscape has evolved over the last 40 years. From understanding the military components of UAS to the standards and regulations evolution, the reader garners a keen understanding of where we came from and why it matters for moving forward. The second approach is in understanding how safety risk management in aviation can be applied to drones, and how that fits into the regulatory and legislative environment internationally. Lastly, a brief synopsis of the community landscape for unmanned aircraft is outlined with interviews from important leaders and stakeholders in the marketplace. Drones fills a gap in resources within the unmanned aircraft world. It provides a robust understanding of drones, while giving the tools necessary to apply for a

certificate of authorization, enabling more advanced flight operations for any company, and developing safety risk management tools for students and career professionals. It will be a mainstay in all safety program courses and will be a required tool for any and all individuals looking to operate safely and successfully in the United States.

Sustainable Aviation Energy and Environmental Issues Springer

While Saudi Arabia's economy remains dominated by its hydrocarbons sector, several other sectors have emerged in recent years as key propellers of economic growth. The Kingdom's financial services industries have continued to expand steadily despite the liquidity challenges posed by falling oil prices. Trade and investment are being treated as key priorities as the government looks to negotiate this altered economic landscape, aiming to leverage its large population, high per capita income and many sea and air links. The country's capital markets sector meanwhile is poised for a period of significant growth on the back of the opening of Tadawul to international investors in 2015 and the raft of regulatory upgrades implemented as result. The domestic insurance industry, which remains dominated by the motor and medical segments, has enjoyed double-digit growth over the past five years in both revenue and net profit. Elsewhere the targets outlined in Vision 2030 indicate that a period of greater opportunity and integration is on the horizon for private players operating in core sectors such as health care, utilities, industry and ICT.

This book explores the economic and broader societal rationale for using unmanned aerial vehicle (UAV) or "drone" technologies as a complement to the current transport and logistics systems in several use cases in East Africa. The specific use cases examined include medical goods deliveries, food aid delivery, land mapping and risk assessment, agriculture, and transport and energy infrastructure inspection. Across these applications, the case for using UAVs is examined within the context of logistics objectives—total operating costs, speed, availability, and flexibility—as well as human, or societal, objectives. In the public health use case, as more low- and middle-income countries explore opportunities to improve efficiency and performance in their health supply chains and diagnostics networks, they face myriad choices about how best to use UAVs to improve product availability and public health outcomes and to reach the last mile. The high-level findings from this analysis are that, if examining commodity categories individually and looking exclusively at costs, delivery with UAVs in general is still more expensive for most categories. Although the cost is still higher, the most cost-effective use case examples include the transport of laboratory samples to selected destinations and delivery of life-saving items and blood. However, "layering" several use cases can provide efficiencies and cost savings by allocating fixed costs across a greater number of flights and maximizing capacity and time utilization. From the perspective of public decision-makers, the cost effectiveness of UAVs cannot be analyzed without looking at the public health benefits, which may be substantial. Drone application in the other use cases examined in this book, such as mapping, risk assessment, and agriculture, is relatively more common than cargo drone operations, and the existing pilot initiatives in East Africa have delivered impressive results for speed and quality (precision). Food aid delivery by drones is still mostly at a planning, rather than implementation, stage. Drone applications are rapidly evolving, and several use cases could gain impact and scale over the coming years.

Aviation Law and Policy Series # 19 The incursion of unmanned aircraft systems (UAS) is radically reshaping the future of international civil aviation. As the civil uses of UAS increase and the technology matures in parallel, questions around the associated legal implications remain unanswered, even in such fundamental legal regimes of international civil aviation as airspace, aircraft, international air navigation, international air transport, and safety. This book – the first to consider international law and regulations to cross-border civil flights of UAS – explores current legal and regulatory frameworks from the perspective of how they may facilitate the operations of UAS. The author, a well-known air law practitioner and diplomat, identifies the legal challenges and proposes sound, well-informed measures to tackle those challenges. The book explores comprehensively the means of incorporating UAS within the arena of air law while stimulating further research and debate on the topic. Analysis of the cross-border operations of UAS focuses on aspects relevant to their immediate future, and address such questions as the following: What processes are currently in place? What factors require attention? What aspects particularly influence the future of UAS? Is the current international legal framework adequate to ensure the operation and development of UAS while preserving high levels of safety? How will artificial intelligence impact the civil operations of UAS? The author's analyses draw on relevant initiatives in existing and proposed Standards and Recommended Practices for the operation of UAS on cross-border flights, as well as States' regulation of UAS within their national airspace. Also described are the main bilateral and multilateral air services and transport agreements with respect to their application to the operation of UAS. Given the escalating need to adopt a comprehensive international regulatory framework for the operation of UAS aimed at facilitating its safe and efficient integration – even as the technology advances and continues to outpace law while the potential for incidents involving UAS grows – this book is well timed to meet the challenge for States and International Civil Aviation Organization and airspace planners. Its innovative approaches to the management of the air traffic safety and security of UAS are sure to influence the development of regulations for civil UAS. The book will be welcomed by aviation regulators, interested international and regional organisations, research organisations, aviation lawyers, and academics in international law and air law. Surveillance in Europe is an accessible, definitive and comprehensive overview of the rapidly growing multi-disciplinary field of surveillance studies in Europe. Written by experts in the field, including leading scholars, the Companion's clear and up to date style will appeal to a wide range of scholars and students in the social sciences, arts and humanities. This book makes the case for greater resilience in European society in the face of the growing pervasiveness of surveillance. It examines surveillance in Europe from several different perspectives, including: the co-evolution of surveillance technologies and practices the surveillance industry in Europe the instrumentality of surveillance for preventing and detecting crime and terrorism social and economic costs impacts of surveillance on civil liberties resilience in Europe's surveillance society. the consequences

and impacts for Europe of the Snowden revelations findings and recommendations regarding surveillance in Europe Surveillance in Europe's interdisciplinary approach and accessible content makes it an ideal companion to academics, policy-makers and civil society organisations alike, as well as appealing to top level undergraduates and postgraduates.

Given the popularity of drones and the fact that they are easy and cheap to buy, it is generally expected that the ubiquity of drones will significantly increase within the next few years. This raises questions as to what is technologically feasible (now and in the future), what is acceptable from an ethical point of view and what is allowed from a legal point of view. Drone technology is to some extent already available and to some extent still in development. The aim and scope of this book is to map the opportunities and threats associated with the use of drones and to discuss the ethical and legal issues of the use of drones. This book provides an overview of current drone technologies and applications and of what to expect in the next few years. The question of how to regulate the use of drones in the future is addressed, by considering conditions and contents of future drone legislation and by analyzing issues surrounding privacy and safeguards that can be taken. As such, this book is valuable to scholars in several disciplines, such as law, ethics, sociology, politics and public administration, as well as to practitioners and others who may be confronted with the use of drones in their work, such as professionals working in the military, law enforcement, disaster management and infrastructure management. Individuals and businesses with a specific interest in drone use may also find in the nineteen contributions contained in this volume unexpected perspectives on this new field of research and innovation. Bart Custers is Associate Professor and Head of Research at eLaw, the Center for Law and Digital Technologies at Leiden University, The Netherlands. He has presented his work at international conferences in the United States, China, Japan, the Middle East and throughout Europe and has published over 80 scientific, professional and popularizing publications, including three books.

The agricultural industry is dealing with enormous challenges across the globe, including the limited availability of arable lands and fresh water, as well as the effect of climate change. Machinery plays a crucial role in agriculture and farming systems, in order to feed the world's growing population. In the last decade, we have witnessed major advances in agricultural machinery and technologies, particularly as manufacturers and researchers develop and apply various novel ways of automation as well as the data and information gathering and analyzing capabilities of their machinery. This book presents the state-of-the-art information on the important innovations in the agricultural and horticultural industry. It reviews and presents different novel technologies and implementation of these technologies to optimize farming processes and food production. There are four sections, each addressing a specific area of development. Section I discusses the recent development of farm machinery and technology. Section II focuses on water and irrigation engineering. Section III covers harvesting and post-harvest technology. Section IV describes computer modelling and simulation. Each section highlights current industry trends and latest research progress. This book is ideal for those working in or are associated with the fields of agriculture, agri-food chain and technology development and promotion.

This book is the first work to build a conceptual framework describing how the pursuit of military effectiveness can present military and political tradeoffs, such as undermining political support for the war, creating new security threats, and that seeking to improve effectiveness in one aspect can reduce effectiveness in other aspects. Here are new ideas about military effectiveness, covering topics such as military robotics, nuclear weapons, insurgency, war finance, public opinion, and others. The study applies these ideas to World War II, the Korean War, the Vietnam War, and the 1973 October War, as well as ongoing conflicts and public policy debates, such as the War on Terror, drone strikes, ISIS, Russian aggression against Ukraine, US-Chinese-Russian nuclear competitions, and the Philippines insurgency, among others. Both scholarly and policy-oriented readers will gather new insights into the political dimensions of military power, and the complexities of trying to grow military power.

The report Civilian Use Of Drones In The EU (HL 122) examines non-military uses for drones, and outlines how drones may be used by civilians in the EU. Drones, or remotely piloted aircraft systems (RPAS) are no longer used solely by the military. In the UK alone, there are now hundreds of companies, mainly small and medium-sized enterprises, using RPAS to provide a range of services, including photography, land surveying, building inspection and crop analysis. RPAS will revolutionize what the aviation industry can achieve and how it is regulated. Europe must act now in order to reap the future benefits of this exciting new technology. This report evaluates the plans set out by the European Commission in a Communication in April 2014 to make Europe a global leader in the RPAS industry.

This book provides readers an in-depth understanding of the inner mechanisms and principles of the global supply chain. Authored by the Head of Supply Chain and Transport Industries at the World Economic Forum, it draws on a wealth of operational and managerial expertise in the global supply chain industry that drive the world's economies. The book analyzes the importance and impact of globally networked sourcing, production and distribution, and presents detailed information on the opportunities, limitations and challenges of linear value and supply chain systems. Building on a series of recent industry cases and with a focus on the latest developments in actual business processes and models, it reveals how the transformation toward circular supply chains and regenerative resource management forms the basis for success and sustainability in business. "The book brings together technical, social, political, and geographical trends, suggesting how supply chain management can lead the quest for many of the world's most pressing challenges." Yossi Sheffi, Professor of Engineering, MIT, Head, MIT Center for Transportation and Logistics "This book provides an essential roadmap, guiding the reader easily through complex developments and concepts." John Manners-Bell, CEO Transport Intelligence and Honorary Visiting Professor, Guildhall Business School, London "With strategic foresight, Lehmacher develops a vision of a circular economy within which consumer, manufacturer and logistics companies assume collective responsibility for sustainable value creation." Alfred Talke, Group Managing Director ALFRED TALKE Logistic Services "Those who are active in logistics and supply chain management, in practice or academia, will discover a fresh view on the whole field of activity beyond the day-to-day-business." Prof. Dr.-Ing. Thomas Wimmer, Chairman of the Executive Board, BVL International

This edited volume analyses the global making of security institutions and practices in our postcolonial world. The volume will offer readers the opportunity to gain a deeper understanding of the global making of how security is thought of and practiced, from US urban policing, diaspora politics and transnational security professionals to policing encounters in Afghanistan, Palestine, Colombia or Haiti. It critically examines and decentres conventional perspectives on security governance and policing. In doing so, the book offers a fresh analytical approach, moving beyond dominant, one-sided perspectives on the transnational character of security governance, which suggest a diffusion of models and practices from a 'Western' centre to the rest of the globe. Such perspectives omit much of the experimenting and learning going on in the (post)colony as well as the active agency and participation of seemingly subaltern actors in producing and co-constituting what is conventionally thought of as 'Western' policing practice, knowledge and institutions. This is the first book that studies the truly global making of security institutions and practices from a postcolonial perspective, by bringing together highly innovative, in-depth empirical cases studies from across the globe. It will be of particular interest to students and scholars interested in International Relations and Global Studies, (critical) Security Studies, Criminology and Postcolonial Studies.

Small Format Aerial Photography and UAS Imagery: Principles, Techniques and Geoscience Applications, Second Edition, provides basic and advanced principles and techniques for Small Format Aerial Photography (SFAP), focusing on manned and unmanned aerial systems, including drones, kites, blimps, powered paragliders, and fixed wing and copter SFAP. The authors focus on everything from digital image processing and interpretation of data, to travel and setup for the best result, making this a comprehensive guide for any user. Nine case studies in a variety of environments, including gullies, high altitudes, wetlands and recreational architecture are included to enhance learning. This new edition includes small unmanned aerial systems (UAS) and discusses changes in legal practices across the globe. In addition, the book presents the history of SFAP, providing background and context for new developments. Provides background and context for new developments in SFAP Covers the legal implications for small format aerial systems in different countries Discusses unmanned aerial systems (drones) and their applications Features new case studies for different applications, including vineyard monitoring and impacts of wind energy

This book presents, in a comprehensive way, current unmanned aviation regulation, airworthiness certification, special aircraft categories, pilot certification, federal aviation requirements, operation rules, airspace classes and regulation development models. It discusses unmanned aircraft systems levels of safety derived mathematically based on the corresponding levels for manned aviation. It provides an overview of the history and current status of UAS airworthiness and operational regulation worldwide. Existing regulations have been developed considering the need for a complete regulatory framework for UAS. It focuses on UAS safety assessment and functional requirements, achieved in terms of defining an "Equivalent Level of Safety", or ELOS, with that of manned aviation, specifying what the ELOS requirement entails for UAS regulations. To accomplish this, the safety performance of manned aviation is first evaluated, followed by a novel model to derive reliability requirements for achieving target levels of safety (TLS) for ground impact and mid-air collision accidents. It discusses elements of a viable roadmap leading to UAS integration in to the NAS. For this second edition of the book almost all chapters include major updates and corrections. There is also a new appendix chapter.

The Chinese People's Liberation Army (PLA) continues to work diligently on all aspects of their aerospace forces. This includes areas not only of traditional aircraft, but also in more modern, and some cutting edge, technologies. The UAV is one area in which the People's Republic of China, and the PLA in specific, has invested significant time and effort. While we recognize that the term "unmanned" is the common and official term, it is rather misleading in the fact that humans, at least up until today, still play a critical role in their operations. Nonetheless, we will not buck convention at this moment, and continue to use "unmanned" for the 'U' in UAV, for this paper. The PRC is the world's largest producer of UAVs at this time, and captures a vast portion of the commercial market, as well as the military one. While it is important to keep the commercial aspects in mind, this particular paper will focus on military UAVs, their development, deployments, and current and potential uses on the battlefield of today and tomorrow. The paper seeks to serve as a starting point to understand this growing field, and to give analysts a common baseline from which to work, and from which to judge growth, both rapidity and complexity, in the future.

CLOUD AND IOT-BASED VEHICULAR AD HOC NETWORKS This book details the architecture behind smart cars being fitted and connected with vehicular cloud computing, IoT and VANET as part of the intelligent transport system (ITS). As technology continues to weave itself more tightly into everyday life, socioeconomic development has become intricately tied to ever-evolving innovations. An example of this is the technology being developed to address the massive increase in the number of vehicles on the road, which has resulted in more traffic congestion and road accidents. This challenge is being addressed by developing new technologies to optimize traffic management operations. This book describes the state-of-the-art of the recent developments of Internet of Things (IoT) and cloud computing-based concepts that have been introduced to improve Vehicular Ad-Hoc Networks (VANET) with advanced cellular networks such as 5G networks and vehicular cloud concepts. 5G cellular networks provide consistent, faster and more reliable connections within the vehicular mobile nodes. By 2030, 5G networks will deliver the virtual reality content in VANET which will support vehicle navigation with real time communications capabilities, improving road safety and enhanced passenger comfort. In particular, the reader will learn: A range of new concepts in VANETs, integration with cloud computing and IoT, emerging wireless networking and computing models New VANET architecture, technology gap, business opportunities, future applications, worldwide applicability, challenges and drawbacks Details of the significance of 5G Networks in VANET, vehicular cloud computing, edge (fog) computing based on VANET. Audience The book will be widely used by researchers, automotive industry engineers, technology developers, system architects, IT specialists, policymakers and students.

Drone strikes have become a key feature of counterterrorism operations in an increasing number of countries. This work explores the various domestic and international legal regimes that govern the manufacture, transfer, and use of armed drones as well as fully autonomous weapons systems where computer algorithms decide who or what to target and when to fire.

Technology has always played a central role in international politics; it shapes the ways states fight during wartime and compete during peacetime. Today, rapid advancements have contributed to a widespread sense that the world is again on the precipice of a new technological era. Emerging technologies have inspired much speculative commentary, but academic scholarship can improve the discussion with disciplined theory-building and rigorous empirics. This book aims to contribute to the debate by exploring the role of technology – both military and non-military – in shaping international security. Specifically, the contributors to this edited volume aim to generate new theoretical insights into the relationship between technology and strategic stability, test them with sound empirical methods, and derive their implications for the coming technological age. This book is very novel in its approach. It covers a wide range of technologies, both old and new, rather than emphasizing a single technology. Furthermore, this volume looks at how new technologies might affect the broader dynamics of the international system rather than limiting the focus to a stability. The contributions to this volume walk readers through the likely effects of emerging technologies at each phase of the conflict process. The chapters begin with competition in peacetime, move to deterrence and coercion, and then explore the dynamics of crises, the outbreak of conflict, and war escalation in an environment of emerging technologies. The chapters in this book, except for the Introduction and the Conclusion, were originally published in the Journal of Strategic Studies.

A revolutionary reimagining of the cities we live in, the air above us, and what goes on in the earth beneath our feet Today we live in a world that can no longer be read as a two-dimensional map, but must now be understood as a series of vertical strata that reach from the satellites that encircle our planet to the tunnels deep within the ground. In *Vertical*, Stephen Graham rewrites the city at every level: how the geography of inequality, politics, and identity is determined in terms of above and below. Starting at the edge of earth's atmosphere and, in a series of riveting studies, descending through each layer, Graham explores the world of drones, the city from the viewpoint of an aerial bomber, the design of sidewalks and the hidden depths of underground bunkers. He asks: why was Dubai built to be seen from Google Earth? How do the super-rich in São Paulo live in their penthouses far above the street? Why do London billionaires build vast subterranean basements? And how do the technology of elevators and subversive urban explorers shape life on the surface and subsurface of the earth? *Vertical* will make you look at the world around you anew: this is a revolution in understanding your place in the world.

To advantageously plan and design for the explosive near-future increase in the number of unmanned aerial vehicles (UAVs) and their demanding applications, integration of UAVs into cellular communication systems has seen increasing interest. This book provides a timely and comprehensive overview of the recent research efforts and results of unmanned aerial vehicles (UAVs)-integrated cellular network communications. The aim of the book is to provide a comprehensive coverage of the potential applications, networking architectures, latest research findings and key enabling technologies, experimental measurement results, as well as up-to-date industry standardizations for UAV communications in cellular systems, including the existing LTE as well as the future 5G-and-beyond systems.

The biennial Aero India Show is here again in Bengaluru. The current issue is focused on Air Power. With Prime Minister raising the upper limit of FDI in the Defence Industry sector and bringing forth a policy of "Make in India" the international weapon systems and equipment manufacturers are realigning their format to meet the requirement in these changed circumstances. The major players in the aviation industry are already on the starting blocks and fine tuning their nuanced approach. Dr Nikolai Novichkov has presented a view of the Russian aviation industry; Steven Gillard has outlined Rolls Royce's committed support in positioning India as a global manufacturing hub. Boeing has elaborated on the maintenance support and services being set up for the two major aircraft deployed by the IAF – C17 and P8I as also making India as a hub for support and services in the region. Rafael Industries and IAI Israel too have outlined the format for possible TOT in an impressive array of technologies in the future. A fair number of our articles are devoted to analysing India's Air Power. Air Marshal Dhiraj Kukreja has comprehensively dwelt on India's present and future combat fleet. Drones as game changers are presented lucidly by S Gopal. Space is considered an adjunct to air power; Gp Capt AK Sachdev has analysed this aspect in relation to India's space endeavours. IAF phased out its fleet of Canberra medium bombers in 1990. Was that a well considered decision taking into account India's future growth as a regional and global power? The role of bombers in the air force is pithily argued by Sqn Ldr Vijinder Thakur. As aircraft exploit the air medium, air defence weapons aim to deny this freedom to aircraft and missiles. Air Marshal Anil Chopra brings forth the success of the 'Iron Dome' deployed by the Israelis and its role in protecting surface targets. This issue also covers India's 'sub-conventional deficit' by our special correspondent and the present state of insurgency in India's North East region by Brig R Borthakur. Gen Vijay Oberoi has highlighted the need for a structural change in India's higher defence management. Brig Deepak Sinha has raised the issue of India's security strategy and doctrine being on divergent paths. Maj Gen AK Chadha has emphatically put forth the need for the military in the digitalised battle field to carve out its own 'slice of space' for operating successfully in such a future war scenario. Air Marshal Anil Chopra and Dr SN Misra have presented the efficacy of TOT and off sets and challenges before the defence industry. Mr Kanwal Sibal has critically assessed the evolving dynamics of Indo-US relations. Gen JS Lidder with his UN experience has looked at the need for enhancing the role of women in conflict zones. Claude Arpi has been a keen China watcher. He presents the current situation in the PLA consequent to the crackdown by the Chinese President Xi Jinping on the wide spread corruption in the Chinese PLA. The IDR has endeavoured through the range of articles to hold the interest of the serious reader of military affairs.

In warzones, ordinary commercially-available drones are used for extraordinary reconnaissance and information gathering. They can also be used for bombings - a drone carrying an explosive charge is potentially a powerful weapon. At the same time asymmetric warfare has become the norm - with large states increasingly fighting marginal terrorist groups in the Middle East and elsewhere. Here, Nicholas Grossman shows how we are entering the age of the drone terrorist - groups such as Hezbollah are already using them in the Middle East. Grossman will analyse the ways in which the United States, Israel and other advanced militaries use aerial drones and ground-based robots to fight non-state actors (e.g. ISIS, al Qaeda, the Iraqi and Afghan insurgencies, Hezbollah, Hamas, etc.) and how these groups, as well as individual terrorists, are utilizing less advanced commercially-available drones to fight powerful state opponents. Robotics has huge implications for the future of security, terrorism and international relations and this will be essential reading on the subject of terrorism and drone warfare.

The use of unmanned aerial vehicles (UAVs) or drones for management of crops, livestock, fisheries, forests and other natural resource-based activities represents a new technological frontier and opens up a range of exciting opportunities. The latest issue of ICT Update is dedicated to the use of this technology and associated systems in different parts of the world. This issue - available online and in print format in both English and French has been published in collaboration with Esri. It includes 12 articles, one interview and a section featuring selected online resources on the topic. Articles range from the use of UAVs to design an irrigation scheme in Nigeria, to feeding a locust monitoring scheme, from documenting illegal land occupancy in Panama to assisting smallholder farmers in monitoring their crops in Eastern Africa, and more.

These proceedings contain research presented at the 6th International Conference on Dynamics in Logistics, held in February 2018. The integration of dynamics within the modeling, planning and control of logistic processes and networks has shown to contribute massively to the improvement of the latter. Moreover, diversification of markets and demand has increased both the complexity and the dynamic changes of problems within the area of logistics. To cope with these challenges, it must become possible to identify, describe and analyze such process changes. Moreover, logistic processes and networks must be revised to be rapidly and flexibly adaptable to continuously changing conditions. This book presents new ideas to solve such problems, offering technological, algorithmic and conceptual improvements. It primarily addresses researchers and practitioners in the field of industrial engineering and logistics.

Agricultural drones are expected to revolutionize the way we conduct agronomic procedures and maintain natural vegetation on earth. This book explores the increasing importance of the role

of aerial robots in managing agricultural farms and natural resources. Agricultural Drones: A Peaceful Pursuit provides a wealth of information on drone usage in agriculture. The book discusses the advanced sensors and imaging capabilities of drones that give farmers new ways to increase yields and reduce crop damage. An introductory chapter provides historical data, with details about various models of drones as well as the most recent and popular agricultural drones in usage. The book goes on to look at such topics as the use of drones for soil fertility, production agronomy, irrigation, weed control, pest and disease control, grain yield forecasting, and economic advantages from drone use. This timely and useful volume will be a valuable resource for faculty, agricultural extension officers, and farmers and farm consultancy agencies. This book would also serve as an excellent textbook for students in agriculture, engineering, geography, etc. Key features:

- outlines the advantages of using drones in agriculture, such as for the management of soil fertility, the study of natural resources and vegetation, the maintenance of adequate irrigation, and the control of weeds and pests
- covers the economic advantages of using drones in agriculture
- examines the regulatory aspects of agricultural drones
- provides actual examples of drone usage in agriculture

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