

Chapter 1

1. In case of an accident, there is a high chance of getting lost. The transportation cost is very high each time. However, if the infrastructure is set once, it will be very easy to use it repeatedly. Time for wireless transmission is negligible as signals travel at the speed of light.
2. Advantages of bursty data communication
 - (a) Pulses are made very narrow, so multipaths are resolvable
 - (b) The transmission device needs to be switched on for less time.

Disadvantages

- (a) Bandwidth required is very high
 - (b) Peak transmit power can be very high.
3. $P_b = 10^{-12}$
 $\frac{1}{25} = 10^{-12}$
 $\tau = \frac{10^{-12}}{2} = 5 \times 10^{11}$ (very high)
 4. Geo: 35,786 Km above earth $\Rightarrow RTT = \frac{2 \times 35786 \times 10^3}{c} = 0.2386s$
 MEO: 8,000- 20,000 Km above earth $\Rightarrow RTT = \frac{2 \times 8000 \times 10^3}{c} = 0.0533s$
 Leo: 500- 2,000 Km above earth $\Rightarrow RTT = \frac{2 \times 500 \times 10^3}{c} = 0.0033s$
 Only Leo satellites as delay = 3.3ms < 30ms

5.

6. optimum no. of data user = d
 optimum no. of voice user = v
 Three different cases:
 Case 1: d=0, v=6
 $\Rightarrow revenue = 60.80.2 = 0.96$

Case 2: d=1, v=3

revenue = [prob. of having one data user] $\times$ (revenue of having one data user)
 + [prob. of having two data user] $\times$ (revenue of having two data user)
 + [prob. of having one voice user] $\times$ (revenue of having one voice user)
 + [prob. of having two voice user] $\times$ (revenue of having two voice user)
 + [prob. of having three or more voice user] $\times$ (revenue in this case)

$$\begin{aligned} \Rightarrow & 0.5^2 \left(\frac{2}{1} \right) \times \$1 + 0.5^2 \times \$1 + \left(\frac{6}{1} \right) 0.8 \times 0.2^5 \times \$0.2 + \left(\frac{6}{2} \right) 0.8^2 \times 0.2^4 \times \$0.4 + \\ & \left[1 - \left(\frac{6}{1} \right) 0.8 \times 0.2^5 \times \$0.2 - \left(\frac{6}{2} \right) 0.8^2 \times 0.2^4 \times \$0.4 \right] \times \$0.6 \\ \Rightarrow & \$1.35 \end{aligned}$$

Case 3: d=2, v=0

revenue = 2 $\times$ 0.5 = \$1

So the best case is case 2, which is to allocate 60kHz to data and 60kHz to voice.

Goldsmith Wireless Communications Solution Manual

Jiyuan Zhang



Goldsmith Wireless Communications Solution Manual:

Wireless Communications Andrea Goldsmith, 2005-08-08 A comprehensive introduction to the basic principles design techniques and analytical tools of wireless communications

Wireless Sensor Networks Ibrahiem M. M. El Emary, S. Ramakrishnan, 2013-08-28 Supplying comprehensive coverage of WSNs this book covers the latest advances in WSN technologies It considers some of theoretical problems in WSN including issues with monitoring routing and power control and details methodologies that can provide solutions to these problems It examines applications of WSN across a range of fields including health defense military transportation and mining Addressing the main challenges in applying WSNs across all phases of our life it explains how WSNs can assist in community development

Mathematical Foundations for Signal Processing, Communications, and Networking Erchin Serpedin, Thomas Chen, Dinesh Rajan, 2017-12-04 Mathematical Foundations for Signal Processing Communications and Networking describes mathematical concepts and results important in the design analysis and optimization of signal processing algorithms modern communication systems and networks Helping readers master key techniques and comprehend the current research literature the book offers a comprehensive overview of methods and applications from linear algebra numerical analysis statistics probability stochastic processes and optimization From basic transforms to Monte Carlo simulation to linear programming the text covers a broad range of mathematical techniques essential to understanding the concepts and results in signal processing telecommunications and networking Along with discussing mathematical theory each self contained chapter presents examples that illustrate the use of various mathematical concepts to solve different applications Each chapter also includes a set of homework exercises and readings for additional study This text helps readers understand fundamental and advanced results as well as recent research trends in the interrelated fields of signal processing telecommunications and networking It provides all the necessary mathematical background to prepare students for more advanced courses and train specialists working in these areas

The Wireless Age, 1918 **Space Antenna Handbook** William A. Imbriale, Steven Shichang Gao, Luigi Boccia, 2012-05-02 This book addresses a broad range of topics on antennas for space applications First it introduces the fundamental methodologies of space antenna design modelling and analysis as well as the state of the art and anticipated future technological developments Each of the topics discussed are specialized and contextualized to the space sector Furthermore case studies are also provided to demonstrate the design and implementation of antennas in actual applications Second the authors present a detailed review of antenna designs for some popular applications such as satellite communications space borne synthetic aperture radar SAR Global Navigation Satellite Systems GNSS receivers science instruments radio astronomy small satellites and deep space applications Finally it presents the reader with a comprehensive path from space antenna development basics to specific individual applications Key Features Presents a detailed review of antenna designs for applications such as satellite communications space borne SAR GNSS receivers science instruments

small satellites radio astronomy deep space applications Addresses the space antenna development from different angles including electromagnetic thermal and mechanical design strategies required for space qualification Includes numerous case studies to demonstrate how to design and implement antennas in practical scenarios Offers both an introduction for students in the field and an in depth reference for antenna engineers who develop space antennas This book serves as an excellent reference for researchers professionals and graduate students in the fields of antennas and propagation electromagnetics RF microwave millimetrewave systems satellite communications radars satellite remote sensing satellite navigation and spacecraft system engineering It also aids engineers technical managers and professionals working on antenna and RF designs Marketing and business people in satellites wireless and electronics area who want to acquire a basic understanding of the technology will also find this book of interest

Solutions Manual Wireless Communications Zhigang Rong, Theodore S Rappaport, 2009-11-01 **Book Bulletin of the Chicago Public Library** Chicago Public Library, 1919

Book Bulletin Chicago Public Library, 1918 **Net Neutrality** Christopher T. Marsden, 2010-01-18 This book is available as open access through the Bloomsbury Open Access programme and is available on www.bloomsburycollections.com Chris Marsden maneuvers through the hype articulated by Netwrok Neutrality advocates and opponents He offers a clear headed analysis of the high stakes in this debate about the Internet s future and fearlessly refutes the misinformation and misconceptions that about Professor Rob Freiden Penn State University Net Neutrality is a very heated and contested policy principle regarding access for content providers to the Internet end user and potential discrimination in that access where the end user s ISP or another ISP blocks that access in part or whole The suggestion has been that the problem can be resolved by either introducing greater competition or closely policing conditions for vertically integrated service such as VOIP However that is not the whole story and ISPs as a whole have incentives to discriminate between content for matters such as network management of spam to secure and maintain customer experience at current levels and for economic benefit from new Quality of Service standards This includes offering a priority lane on the network for premium content types such as video and voice service The author considers market developments and policy responses in Europe and the United States draws conclusions and proposes regulatory recommendations *Proceedings* , 2003

The Enthralling World of Kindle Books: A Detailed Guide Unveiling the Pros of Kindle Books: A World of Ease and Versatility

Kindle books, with their inherent portability and ease of access, have freed readers from the limitations of physical books. Gone are the days of lugging bulky novels or carefully searching for specific titles in bookstores. E-book devices, sleek and lightweight, effortlessly store an extensive library of books, allowing readers to indulge in their preferred reads whenever, everywhere. Whether commuting on a busy train, relaxing on a sunny beach, or just cozying up in bed, Kindle books provide an exceptional level of convenience.

A Literary Universe Unfolded: Exploring the Vast Array of E-book Goldsmith Wireless Communications Solution Manual Goldsmith Wireless Communications Solution Manual

The Kindle Store, a virtual treasure trove of literary gems, boasts an wide collection of books spanning diverse genres, catering to every readers taste and choice. From gripping fiction and mind-stimulating non-fiction to classic classics and modern bestsellers, the E-book Shop offers an exceptional abundance of titles to discover. Whether looking for escape through immersive tales of imagination and adventure, delving into the depths of past narratives, or broadening ones knowledge with insightful works of scientific and philosophical, the Kindle Store provides a doorway to a literary world brimming with endless possibilities.

A Game-changing Force in the Literary Scene: The Persistent Influence of E-book Books Goldsmith Wireless Communications Solution Manual

The advent of Kindle books has undoubtedly reshaped the bookish scene, introducing a model shift in the way books are published, distributed, and consumed. Traditional publishing houses have embraced the digital revolution, adapting their approaches to accommodate the growing need for e-books. This has led to a surge in the accessibility of E-book titles, ensuring that readers have access to a vast array of literary works at their fingertips. Moreover, E-book books have democratized entry to books, breaking down geographical limits and offering readers worldwide with equal opportunities to engage with the written word. Regardless of their place or socioeconomic background, individuals can now immerse themselves in the intriguing world of literature, fostering a global community of readers.

Conclusion: Embracing the Kindle Experience Goldsmith Wireless Communications Solution Manual

Kindle books Goldsmith Wireless Communications Solution Manual, with their inherent ease, flexibility, and vast array of titles, have certainly transformed the way we encounter literature. They offer readers the freedom to explore the limitless realm of written expression, anytime, everywhere. As we continue to travel the ever-evolving online landscape, Kindle books stand as testament to the persistent power of storytelling, ensuring that the joy of reading remains accessible to all.

<https://staging.conocer.cide.edu/About/book-search/fetch.php/hasil%20seleksi%20penerimaan%20siswa%20baru%20smpnke-samben.pdf>

Table of Contents Goldsmith Wireless Communications Solution Manual

1. Understanding the eBook Goldsmith Wireless Communications Solution Manual
 - The Rise of Digital Reading Goldsmith Wireless Communications Solution Manual
 - Advantages of eBooks Over Traditional Books
2. Identifying Goldsmith Wireless Communications Solution Manual
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Goldsmith Wireless Communications Solution Manual
 - User-Friendly Interface
4. Exploring eBook Recommendations from Goldsmith Wireless Communications Solution Manual
 - Personalized Recommendations
 - Goldsmith Wireless Communications Solution Manual User Reviews and Ratings
 - Goldsmith Wireless Communications Solution Manual and Bestseller Lists
5. Accessing Goldsmith Wireless Communications Solution Manual Free and Paid eBooks
 - Goldsmith Wireless Communications Solution Manual Public Domain eBooks
 - Goldsmith Wireless Communications Solution Manual eBook Subscription Services
 - Goldsmith Wireless Communications Solution Manual Budget-Friendly Options
6. Navigating Goldsmith Wireless Communications Solution Manual eBook Formats
 - ePub, PDF, MOBI, and More
 - Goldsmith Wireless Communications Solution Manual Compatibility with Devices
 - Goldsmith Wireless Communications Solution Manual Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Goldsmith Wireless Communications Solution Manual
 - Highlighting and Note-Taking Goldsmith Wireless Communications Solution Manual
 - Interactive Elements Goldsmith Wireless Communications Solution Manual

8. Staying Engaged with Goldsmith Wireless Communications Solution Manual
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Goldsmith Wireless Communications Solution Manual
9. Balancing eBooks and Physical Books Goldsmith Wireless Communications Solution Manual
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Goldsmith Wireless Communications Solution Manual
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Goldsmith Wireless Communications Solution Manual
 - Setting Reading Goals Goldsmith Wireless Communications Solution Manual
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Goldsmith Wireless Communications Solution Manual
 - Fact-Checking eBook Content of Goldsmith Wireless Communications Solution Manual
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
14. Embracing eBook Trends
 - Integration of Multimedia Elements
 - Interactive and Gamified eBooks

Goldsmith Wireless Communications Solution Manual Introduction

In this digital age, the convenience of accessing information at our fingertips has become a necessity. Whether its research papers, eBooks, or user manuals, PDF files have become the preferred format for sharing and reading documents. However, the cost associated with purchasing PDF files can sometimes be a barrier for many individuals and organizations. Thankfully, there are numerous websites and platforms that allow users to download free PDF files legally. In this article, we will explore some of the best platforms to download free PDFs. One of the most popular platforms to download free PDF files is Project

Gutenberg. This online library offers over 60,000 free eBooks that are in the public domain. From classic literature to historical documents, Project Gutenberg provides a wide range of PDF files that can be downloaded and enjoyed on various devices. The website is user-friendly and allows users to search for specific titles or browse through different categories. Another reliable platform for downloading Goldsmith Wireless Communications Solution Manual free PDF files is Open Library. With its vast collection of over 1 million eBooks, Open Library has something for every reader. The website offers a seamless experience by providing options to borrow or download PDF files. Users simply need to create a free account to access this treasure trove of knowledge. Open Library also allows users to contribute by uploading and sharing their own PDF files, making it a collaborative platform for book enthusiasts. For those interested in academic resources, there are websites dedicated to providing free PDFs of research papers and scientific articles. One such website is Academia.edu, which allows researchers and scholars to share their work with a global audience. Users can download PDF files of research papers, theses, and dissertations covering a wide range of subjects. Academia.edu also provides a platform for discussions and networking within the academic community. When it comes to downloading Goldsmith Wireless Communications Solution Manual free PDF files of magazines, brochures, and catalogs, Issuu is a popular choice. This digital publishing platform hosts a vast collection of publications from around the world. Users can search for specific titles or explore various categories and genres. Issuu offers a seamless reading experience with its user-friendly interface and allows users to download PDF files for offline reading. Apart from dedicated platforms, search engines also play a crucial role in finding free PDF files. Google, for instance, has an advanced search feature that allows users to filter results by file type. By specifying the file type as "PDF," users can find websites that offer free PDF downloads on a specific topic. While downloading Goldsmith Wireless Communications Solution Manual free PDF files is convenient, it's important to note that copyright laws must be respected. Always ensure that the PDF files you download are legally available for free. Many authors and publishers voluntarily provide free PDF versions of their work, but it's essential to be cautious and verify the authenticity of the source before downloading Goldsmith Wireless Communications Solution Manual. In conclusion, the internet offers numerous platforms and websites that allow users to download free PDF files legally. Whether it's classic literature, research papers, or magazines, there is something for everyone. The platforms mentioned in this article, such as Project Gutenberg, Open Library, Academia.edu, and Issuu, provide access to a vast collection of PDF files. However, users should always be cautious and verify the legality of the source before downloading Goldsmith Wireless Communications Solution Manual any PDF files. With these platforms, the world of PDF downloads is just a click away.

FAQs About Goldsmith Wireless Communications Solution Manual Books

How do I know which eBook platform is the best for me? Finding the best eBook platform depends on your reading preferences and device compatibility. Research different platforms, read user reviews, and explore their features before making a choice. Are free eBooks of good quality? Yes, many reputable platforms offer high-quality free eBooks, including classics and public domain works. However, make sure to verify the source to ensure the eBook credibility. Can I read eBooks without an eReader? Absolutely! Most eBook platforms offer webbased readers or mobile apps that allow you to read eBooks on your computer, tablet, or smartphone. How do I avoid digital eye strain while reading eBooks? To prevent digital eye strain, take regular breaks, adjust the font size and background color, and ensure proper lighting while reading eBooks. What the advantage of interactive eBooks? Interactive eBooks incorporate multimedia elements, quizzes, and activities, enhancing the reader engagement and providing a more immersive learning experience. Goldsmith Wireless Communications Solution Manual is one of the best book in our library for free trial. We provide copy of Goldsmith Wireless Communications Solution Manual in digital format, so the resources that you find are reliable. There are also many Ebooks of related with Goldsmith Wireless Communications Solution Manual. Where to download Goldsmith Wireless Communications Solution Manual online for free? Are you looking for Goldsmith Wireless Communications Solution Manual PDF? This is definitely going to save you time and cash in something you should think about. If you trying to find then search around for online. Without a doubt there are numerous these available and many of them have the freedom. However without doubt you receive whatever you purchase. An alternate way to get ideas is always to check another Goldsmith Wireless Communications Solution Manual. This method for see exactly what may be included and adopt these ideas to your book. This site will almost certainly help you save time and effort, money and stress. If you are looking for free books then you really should consider finding to assist you try this. Several of Goldsmith Wireless Communications Solution Manual are for sale to free while some are payable. If you arent sure if the books you would like to download works with for usage along with your computer, it is possible to download free trials. The free guides make it easy for someone to free access online library for download books to your device. You can get free download on free trial for lots of books categories. Our library is the biggest of these that have literally hundreds of thousands of different products categories represented. You will also see that there are specific sites catered to different product types or categories, brands or niches related with Goldsmith Wireless Communications Solution Manual. So depending on what exactly you are searching, you will be able to choose e books to suit your own need. Need to access completely for Campbell Biology Seventh Edition book? Access Ebook without any digging. And by having access to our ebook online or by storing it on your computer, you have convenient answers with Goldsmith Wireless Communications Solution Manual To get started finding Goldsmith Wireless Communications Solution Manual, you are right to find our website which has a comprehensive collection of books online. Our library is the biggest of these that have literally hundreds

of thousands of different products represented. You will also see that there are specific sites catered to different categories or niches related with Goldsmith Wireless Communications Solution Manual So depending on what exactly you are searching, you will be able to choose ebook to suit your own need. Thank you for reading Goldsmith Wireless Communications Solution Manual. Maybe you have knowledge that, people have search numerous times for their favorite readings like this Goldsmith Wireless Communications Solution Manual, but end up in harmful downloads. Rather than reading a good book with a cup of coffee in the afternoon, instead they juggled with some harmful bugs inside their laptop. Goldsmith Wireless Communications Solution Manual is available in our book collection an online access to it is set as public so you can download it instantly. Our digital library spans in multiple locations, allowing you to get the most less latency time to download any of our books like this one. Merely said, Goldsmith Wireless Communications Solution Manual is universally compatible with any devices to read.

Find Goldsmith Wireless Communications Solution Manual :

~~hasil seleksi penerimaan siswa baru smpn kesamben~~

hatz 1b20 manual

hasil osn guru bengkulu

harper39s biochemistry 26th edition

harry potter research paper topics

harman kardon hk705 receivers owners manual

hatz 2m41 service manual

haulotte optimum 8-1 manual

harmony 11user manual

hatz diesel 1b20 service

hasil osn blora 2015

hasil seleksi osn smp 2015 kalteng

hasil osn 2015 smp

harris prc 152 manual

hasil osn malang 2015

Goldsmith Wireless Communications Solution Manual :

Introduction to Social Work, Fourth Edition This engaging text gives readers a practical guide to the many ways in which social workers effect change in their communities and the world. The authors offer ... Introduction to Social Work, Fourth Edition: The People's ... This engaging text gives readers a practical guide to the many ways in which social workers effect change in their communities and the world. The authors offer ... Empowerment Series: An Introduction to the Profession of ... Get an overview of the social work profession and learn about the role of the social worker in the social welfare system with Segal, Gerdes and Steiner's text. Introduction to Social Work, Fourth Edition The People's ... Book Details. Full Title: Introduction to Social Work, Fourth Edition: The People's Profession. Edition: 4th edition. ISBN-13: 978-0190615666. Format: Paperback ... Introduction to Social Work, Fourth Edition: The People's ... The authors offer an overview and history of the profession; introduce readers to the practice of social work at the micro, mezzo, and macro level; and finally ... Introduction to Social Work, Fourth Edition - Ira Colby The authors offer an overview and history of the profession; introduce readers to the practice of social work at the micro, mezzo, and macro level; and finally ... Introduction to Social Work, Fourth Edition: The People's ... Introduction to Social Work, Fourth Edition: The People's Profession ; Author: Ira Colby ; Publisher: Oxford University Press ; Release Date: 2015 ; ISBN-13: ... Introduction to Social Work, Fourth Edition - Paperback The authors offer an overview and history of the profession; introduce readers to the practice of social work at the micro, mezzo, and macro level; and finally ... An Introduction to the Profession of Social Work Assess how social welfare and economic policies impact the delivery of and access to social services. 4, 7, 10, 11 c. Apply critical thinking to analyze, ... Introduction to Social Work, Fourth Edition: The ... Introduction to Social Work, Fourth Edition: The People's Profession (4th Edition). by Sophia F. Dziegielewski, Ira Colby. Paperback, 480 Pages, Published ... By Roger A. Arnold - Economics (11th Revised edition) (1/ ... By Roger A. Arnold - Economics (11th Revised edition) (1/15/13) [unknown author] on Amazon.com. *FREE* shipping on qualifying offers. By Roger A. Arnold ... Economics: 9781133189756 Dr. Roger A. Arnold is Professor of Economics at California State University San Marcos, where his fields of specialization include general microeconomic theory ... Economics. Roger A. Arnold | Rent - Chegg Authors: Roger A Arnold ; Full Title: Economics. Roger A. Arnold ; Edition: 11th edition ; ISBN-13: 978-1133582311 ; Format: Paperback/softback. Arnold, Roger A.: 9781133189756 - Economics Dr. Roger A. Arnold is Professor of Economics at California State University San Marcos, where his fields of specialization include general microeconomic ... Roger A. Arnold | Get Textbooks Microeconomics(11th Edition) (with Videos: Office Hours Printed Access Card) (MindTap Course List) by Roger A. Arnold Paperback, 560 Pages, Published 2013 ... Economics - Roger A. Arnold A complete introduction to basic principles of economics for the two-term course. Also available in micro and macro paperback splits. Economics by Roger Arnold Buy Economics by Roger Arnold ISBN 9781285738321 1285738322 12th edition or 2015 edition ... 11th edition which is nearly identical to the newest editions. We ... Economics by

Roger A. Arnold: New (2013) ISBN: 9781133189756 - Hardcover - Thomson Learning - 2013 - Condition: New - pp. 912 11th Edition - Economics. Arnold Roger A Arnold | Get Textbooks Microeconomics(11th Edition) (with Videos: Office Hours Printed Access Card) (MindTap Course List) by Roger A. Arnold Paperback, 560 Pages, Published 2013 ... List of books by author Roger A. Arnold See 1 Edition. Economics (Joliet Junior College) Edition: 11th 1285896556 Book Cover. Economics (Joliet Junior College)... by Roger A. Arnold. \$7.39. Format ... David Brown 900 Tractors Operators Manual PDF CD David Brown 900 Tractors Operators Manual PDF CD ; Item Number. 124259124696 ; Model. 990 ; Literature Type. Manuals/ Handbooks ; Accurate description. 4.8. David Brown info II David Brown 900 Series VAD VAK VAG Instruction Manual · David Brown 950 & 950 ... David Brown 990 995 Tractor Operators Manual — 9-5119. David Brown 990 Diesel ... David Brown Heavy Equipment Manuals & Books for ... Get the best deals on David Brown Heavy Equipment Manuals & Books for David Brown Tractor when you shop the largest online selection at eBay.com. Books & Manuals Books and Manuals for David Brown Tractors organised by model. ... Instruction Book, 900H. Price£13.20. Excluding Sales Tax ... David Brown 900 Agricultural Tractor Parts Manual David Brown 900 Agricultural Tractor Parts Manual. David Brown 900 Instruction Book DB 900 - Series VAD/1J/30, VAK1/1J/30 and VAG/1J/30 Instruction Book. Covers operating, routine maintenance, servicing information and includes a wiring diagram ... David Brown Tractor 900 Operators Manual THIS OPERATORS MANUAL GIVES INFORMATION ON THE OPERATION THE LUBRICATION MAINTENANCE AND SAFETY ASPECTS INCLUDES ILLUSTRATIONS AND DIAGRAMS TO. David Brown Tractor 900 & 995 Operators Manual THIS OPERATORS MANUAL GIVES ADVICE ON THE OPERATION OF THE MACHINE THE LUBRICATION MAINTENANCE AND SAFETY ASPECTS INCLUDES ILLUSTRATIONS AND DIAGRAMS. David Brown Tractor 900 Operators Manual THIS REPRINTED OPERATORS MANUAL GIVES INFORMATION ON THE OPERATION, THE LUBRICATION, MAINTENANCE AND SAFETY ASPECTS ILLUSTRATIONS AND.