

**UNIVERSITITEKNOLOGI MARA**

**A Comparison Study Between Software-defined  
Radio and Cognitive Radio**

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Thesis submitted in fulfillment of the requirements for

**Bachelor of Science (Hons) Data Communication & Networking**

**Faculty of Information Technology And  
Quantitative Science**

**May 2007**

## ACKNOWLEDGEMENT

First of all, I would like to thank to ALLAH SWT because finally I've finished my proposal report. Here, I would like to acknowledge the support and advice offered by my supervisor Professor Madya Dr. Mazani bin Manaf. Without his tireless and patient monitoring, my proposal might not have been completed. Also, I would like to thank to En Jamel for the encouragement. Not forgotten to my lecturer Dr. Saadiah bt Yahya for all the comments, I took it to complete my report. I also want to give my big thank you to David K. Murotake, Ph.D.President, SCA Technica, Inc. [dmurotak@scatechnica.com](mailto:dmurotak@scatechnica.com), because he gave me a moral supports and gave me a lots of tips and references to make sure my research complete. I owe you so much, Sir Dave.

Thanks to all my fellow friends who gave me supported until the end of this semester. Also to my housemate that understand my works. I'm sorry guys if I always scolded you when making some noise. And the last but not least, my lovely parents especially my lovely mother because understand my feeling and comfort me. It makes me fell better and feel much of energy back when I've got your called on that day. You are my inspirations and I love you so much mom, from the bottom of my heart.

Lastly, I want to thank to all people that involved in my report. May ALLAH bless all of you.

Thank you.

Assalamualaikum.

## ABSTRACT

Software defined radios (SDR) introduce many new challenges, one of which is the proper development, maintenance, and distribution of the core software. As with any software venture, SDR requires industry, government, and the independent development community to work together to produce an environment that fosters software development and innovation. SDR differs from other areas of software development by the long history of radio regulatory requirements that must be satisfied. Cognitive radio systems offer the opportunity to improve spectrum utilization by detecting unoccupied spectrum bands and adapting the transmission to those bands while avoiding the interference to primary users. Since these technologies do not reach yet in Malaysia, this research was developed to study and compare the usage and the capabilities for both. This research can be beneficial for the network administrator or anyone who in IT field to gain their knowledge on the latest technology. This research focused on the architectures, applications, block diagrams, and advantages and disadvantages for both of technologies. Actually, any SDR is in cognitive radio systems. From my researches I finally found that each technology has their own strengths and weaknesses. But, Cognitive Radio is better and the enhancement of SDR.

# TABLE OF CONTENT

CONTENT	PAGE
APPROVAL SHEET	ii
DECLARATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
LIST OF FIGURES	x
LIST OF ABBREVIATIONS	xi
<b>INTRODUCTION</b>	<b>1</b>
1.1 Background of Software-defined Radio	1
1.2 Background of Cognitive Radio	2
1.3 Problem Statement	3
1.3 Project Objective	5
1.4 Project Scope	5
1.5 Project Significance	5
<b>LITERATURE REVIEW</b>	<b>6</b>
2.1 Spectrum Etiquette for Optimized Spectrum Utilization	6
2.2 Free Spectrum Abounds	7
2.3 Cognitive 'AGILE' Radio as Technology for Spectrum Management and Flexible Radio Regulation	8
2.4 Previous Works of Research	8
2.4.1 Implementation issues in spectrum sensing for cognitive radio	8
2.4.2 Cognitive Ultra-Wideband Radio Evolution for Innovative and Dynamic Spectrum Access Network	9
2.4.3 Fundamentals of Cognitive Radio	10
2.4.4 Cognitive Radio models for Wireless Systems	10

2.4.5 Cognitive Radio - Trends and Research Challenges	11
2.4.6 A Real Time Cognitive Radio Test-bed for Physical and Link Layer Experiments	11
2.4.7 A cognitive radio approach for usage of virtual unlicensed spectrum	12
2.4.8 What are Adaptive, Cognitive Radio?	13
2.4.9 Cognitive Radio for Unlicensed WANs	13
2.4.10 Enhancing WLAN Security with Cognitive Radio	14
2.4.11 Sharing Spectrum the Smarter Way	15
2.4.12 UWB Coexistence and Cognitive Radio	16
2.4.13 Cognitive Radio - An Integrated Agent Architecture for Software-defined radio	16
2.4.14 Cognitive Radio Activities	17
2.4.15 High Performance Cognitive Radio Platform with Integrated Physical and Network Layer Capabilities	18
2.4.16 Cognitive Radio Shows Great Promise	19
2.4.17 Multichannel basebands meet challenge of Cognitive Radio	20
2.4.18 Using Game Theory to Analyze Physical Layer Cognitive Radio Algorithm	21
2.4.19 FCC Noticed of Proposed Rulemaking(NPRM) on Cognitive Radio (CR) and Software-Defined Radio (SDR)	22
2.4.20 Interference Resolution and Control in High Frequency Reuse Environment using Cognitive Radio	23
2.4.21 Cognitive Radio - Public Safety Overlay Network Concept	23
2.4.22 Cognitive Radio: An Evolution from Software Radio	24
2.4.23 The Next Advancements in Software-Defined Radio	25