TAPR History

From Idea to Manufacturing: Uncovering the steps for success

Steven Bible, N7HPR
President, TAPR

HamSCI Workshop
NJIT
February 24, 2018
A Little History About TAPR

• Began in 1981
• Non-Profit 501.3c educational organization

http://www.tapr.org

• Accidental Incubator
• Products the “enable” the amateur experimenter
Mission Statement

TAPR is a community that provides leadership and resources to radio amateurs for the purpose of advancing the radio art.
Philosophy

• Promote the “Technical Side of the Hobby”
  • Advance the radio art

• Provide hardware and software that which does not exist
  • Until it becomes mainstream (maturity)
Funding

- Collect dues
- Profits from sales of products
  - Books
  - Kits
  - Projects
25th Anniversary 2006

James Fortney, K6IYK
Pete Eaton, WB9FLW
Bill Reed, WD0ETZ
Mel Whitten, K0PFX
Mike Parker, KT7D
Chuck Green, NØADJ
Lyle Johnson, KK7p
Mike Baker
Dan Morrison, KV7B
Fried Heyn, WA6WZO
Bob McGwier, N4HY
Eric Gustafson, N7CL
Terminal Node Controllers

TNC-1
Produced between 1982-1983

TNC-2
Produced between 1984-
MACA - A New Channel Access Method for Packet Radio

by Phil Karn, KA9Q

Abstract: The existing Carrier Sense Multiple Access (CSMA) method widely used in amateur packet radio on shared simplex packet radio channels frequently suffers from the well-known "hidden terminal problem" and the less well known but related problem of the "exposed terminal." This paper proposes a new scheme, Multiple Access with Collision Avoidance (MACA), that could greatly relieve these problems. MACA can also be easily extended to provide automatic transmitter power control. This could increase the carrying capacity of a channel substantially.

https://www.tapr.org/pub_cnc09.html
9600 Baud Modem

- Steve Goode, K9NG
- James Miller, G3RUH

https://www.tapr.org/kits_9600.html
APRS and GPS
Bob Bruninga, WB4APR
APRS Standard Documented

• Ian Wade, G3NRW
• John Ackermann, N8UR
• Greg Jones, WD5IVD

http://www.aprs.org/doc/APRS101.PDF

Published
August 2000
APRS® MIC-Encoder

- Bob Bruninga, WB4APR
- 1996-1997

https://www.tapr.org/kits_mic-e.html
TAC-2

- Tom Clark, W3IWI
- Steve Bible, N7HPR, Project Manager
- Greg Jones, WD5IVD, Asst. Project Manager
- Joe Borovetz, WA5VMS, Inventory
- John Koster, W9DDD, PCB Liaison
- Rick Hambly, WB2TNL, Windows Software

1998
DGPS Reference Station

- Doug McKenny, KC3RL
- Steven Bible, N7HPR

http://www.tapr.org/gps_dgps.html
PIC-Encoder

- Steve Bible, N7HPR Project Manager
- Joe Borovetz, WA5VMS Parts Liaison
- Steve Dimse, K4HG Conceptual Design
- Byon Garrabrant, N6BG Programmer, Conceptual Design
- John Hansen, W2FS Programmer, Conceptual Design
- Greg Jones, WD5IVD TAPR Project Liaison
- John Koster, W9DDD PCB Design
- Dan Welch, W6DFW Conceptual Design, Documentation

1999

https://www.tapr.org/kits_pic-e.html
Byon Garrabrants, N6BG

- Goes on the create Byonics

https://www.byonics.com/products
GPS Modules and Accessories

• Motorola Oncore
• Garmin

Doug McKinney, KC3RL
Weather
T-238 and T-238+MODEM

• Low-Cost APRS Weather Station
  • William Beals, NØXGA
  • Russ Chadwick, KBØTV

• Dallas Semiconductor 1-Wire Weather Station

2000
Citizen Weather Observer Program
http://wxqa.com/
• X1W-1 - 1-Wire Indoor Sensor/Interface Kit

• X1W-4 EMP Sensor Kit

• X1W-1 – Humidity and Temperature

Circa ~2005

https://www.tapr.org/kits_x1w-1.html

https://www.tapr.org/kits_x1w-2.html

https://www.tapr.org/kits_x1w-4.html
Digital Signal Processing
TAPR Motorola EVM56002 Radio Interface and Enclosure Kit

- Motorola DSP56002EVM Evaluation Module
  - Johan Forrer, KC7WW – QEX Article August 1995
  - Steven Bible, N7HPR
  - Lyle Johnson, WA7GXD

1999
Spread Spectrum
DCC 1997

An All-Software Advanced HF Modem for Amateur Radio

• Matthew Ettus, N2MJI
• Student Paper Award
DCC 1998

Introduction to Spread Spectrum

https://www.youtube.com/watch?v=imFQCnxqo40
Tom McDermott, N5EG
TAPR FHSS Radio

An Amateur 900Mhz Spread-Spectrum Radio Design


- Tom McDermott, N5EG
- Bob Stricklin, N5BRG
- Bill Reed, WD0ETZ

Circa ~1996

https://www.tapr.org/fhss_project.html
Spread Spectrum Book

Subtitle: Tales from the Rebel Alliance

Editors:
Greg Jones, WD5IVD
Steve Bible, N7HPR

Published by Tucson Amateur Packet Radio Corporation
Timing Products

• John Ackermann, N8UR

TADD-1
Clock-Block

TADD-2 Mini
Pulse Puppy

TICC
TNS BUF

TAS S
Software Defined Radio
The DSP-10: An All-Mode 2-Meter Transceiver Using a DSP IF and PC-Controlled Front Panel

- Bob Larkin, W7PUA
- QST Oct, Nov, Dec 1999

https://www.tapr.org/kits_dsp10.html
Matt Ettus, N2JMI

• Software Defined Radio Seminars

• Goes on to create Ettus Research

https://www.ettus.com/
Gerald Youngblood

• A Software-Defined Radio for the Masses
  • Three part article in QEX

• Presents at the 2002 DCC in Denver

• Later forms Flex-Radio Systems

The "Accidental" Company
The Making of FlexRadio, from the 2014 DCC
https://www.youtube.com/watch?v=HBlkinewdHM
openHPSDR

- High Performance Software Defined Radio

2009-2012
Digital Modes
PSK-31

- Peter Martinez, G3PLX creates PSK-31
- Johan Forrer, KC7WW
  - A DSP-Based Audio Signal Processor
  - QEX Article August 1995
- Pawel Jalocha, SP9VRC
  - SLOWBPSK written for Motorola the DSP56002 EVM

http://aintel.bi.ehu.es/psk31.html
D-Star

• Ray Novak, N9JA
• Presents D-Star at the 2002 DCC in Denver
CODEC-2

- David Rowe, VK5DGR
- Open source speech codec designed for communications quality speech between 700 and 3200 bit/s
- https://www.rowetel.com/?page_id=452
WSPR Pi

• Zoltan Doczi, HA7DCD

http://www.tapru.org/kits_20M-wspr-pi.html
Conferences
Digital Communications Conference

- Formerly Computer Networking Conference
- MOU with ARRL since 1996
- Name changed to Digital Communications Conference (DCC)
DCC

• Call for Papers
• Published Proceedings (ARRL)
• Posted online (www.taprl.org/dcc)
• Speaking slots: 45 minutes
• Lightning Talks
• Demo Room
• Friday Night Social
• Keynote Speaker Saturday Night Banquet
DCC

• Great for Students

• YouTube Videos
  • Gary Pearce KN4AQ
  • https://www.hamradionow.tv/tapr-dcc/
  • 2008, 2009, 2011 to present
  • 2010 available on DVD
2018 ARRL/TAPR Digital Communications Conference

September 14-16
Albuquerque, New Mexico

Make your reservations now for three days of learning and enjoyment at the Sheraton Albuquerque Airport Hotel. The Digital Communications Conference schedule includes technical and introductory forums, demonstrations, a Saturday evening banquet and an in-depth Sunday seminar. This conference is for everyone with an interest in digital communications from beginner to expert.

Call Tucson Amateur Packet Radio at: 972-671-8277, or go online to www.tapr.org/dcc
Awards
Dayton Hamvention’s Technical Excellence award for 2003

- 1984 – Lyle Johnson, WA7GXD
- 1990 – Bob McGwier, N4HY
- 1998 – Bob Bruninga, WB4APR
- 2001 -- Peter Martinez, G3PLX
- 2003 -- Steve Dimse, K4HG
- 2008 -- Thomas C. McDermott, N5EG
- 2013 -- David Rowe, VK5DGR
Awards

QST June 1995 Cover Plaque Award
“Amateur Radio on the World Wide Web”
Steven Bible, N7HPR and Greg Pool, WH6DT
What Can TAPR Do For You?

http://www.tapr.org