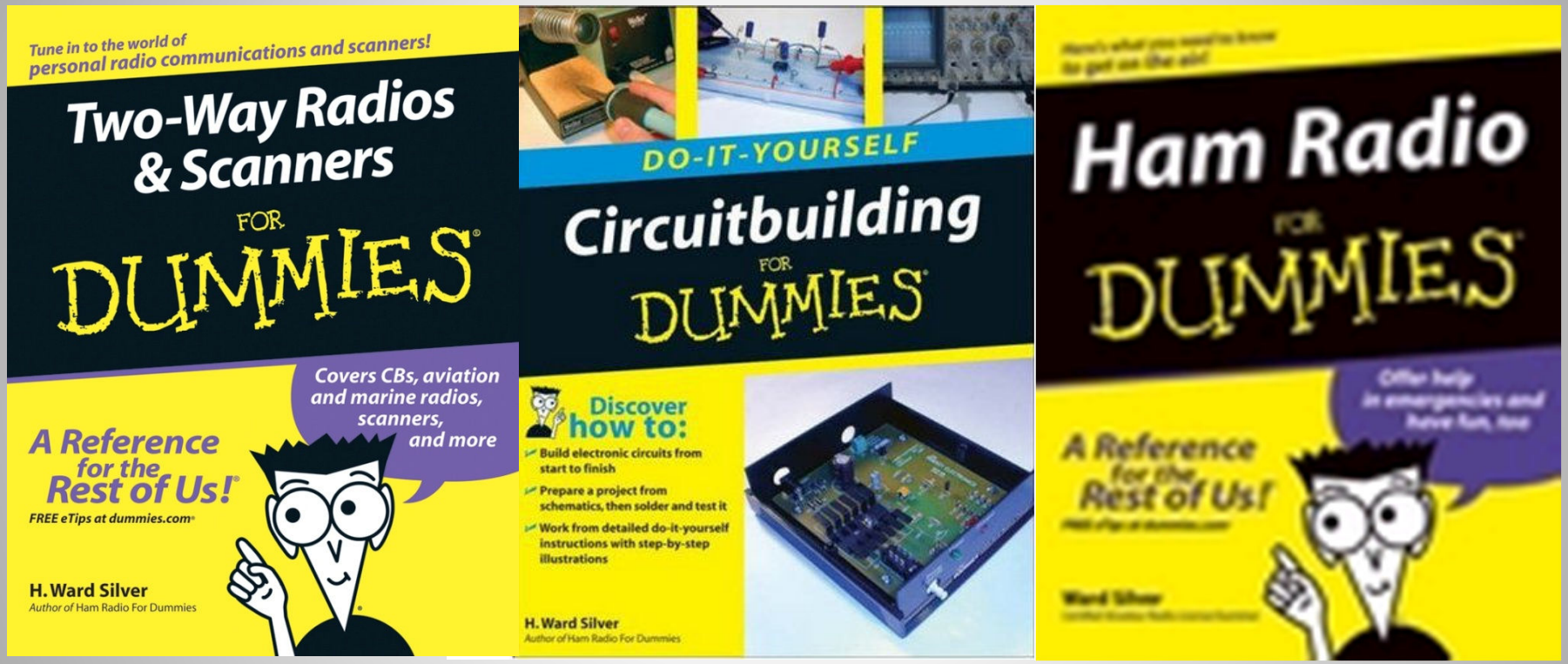
Contesting In the Second Century Of Ham Radio

What Does It Mean?

Ward Silver - NØAX

Visalia Int'l DX Convention - 2013

No Subliminal Content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What Does It Mean?

- To have a radio contest or award when…
  - ***Everybody*** knows where ***everybody*** is transmitting and receiving

AND

  - ***Everybody*** can receive and transmit from ***anywhere***
- Those days are just about here…

What Is A Contest?

- *"I can do it better than you!"*
- A limited-duration **exercise**
- Specifies a range of **actions** and **metrics**
  - CQ, S&P, exchange, bands, etc
  - QSOs, multipliers, bonuses, score, etc
- Operator **ability** is evaluated and compared for that contest using those metrics

What Is An Award

- *"I have it and you don't"*
- An open-ended (or long-term) activity
- Specifies certain **items** or **information**
  - Validated contacts with entities, islands, etc
- Items and information must be **acquired** through radio means
- The award requires the acquisition of some quantity of the items or information

No More Secrets

- Contests and awards depend on **secrets**
  - **Knowledge** you don't have
  - Having to tune to **locate** other stations
  - Having to **discern** their calls and info
- Bandwidth and DSP/SDR
  - Acquire wide spectrum "instantaneously"
  - Discerns calls and info automatically
- Internet provides additional information

The ‘Net is Everywhere

- Internet access nearly ubiquitous
  - 90-95% of active hams have access in the shack
- Real-time “meta” information *about* the contest or other station
- Stations and ops can be linked by **networks**
  - “Wide area logging” (Win-Test’s IARU HQ mode)
  - Distributed “partner mode”
  - Remote stations, receive and transmit
  - Remote decoders and Reverse Beacon Network

You Are Any and Everywhere

- Contests and awards assume **fixed** location
- Moving changes the *geomagnetic equation*
  - That's why WRTC is so novel
- Remote stations increasing rapidly
  - Wherever **bandwidth** and **regulations** permit
  - Rules require ID based on transmitter QTH
  - What about receive?
  - What about remote decoders?

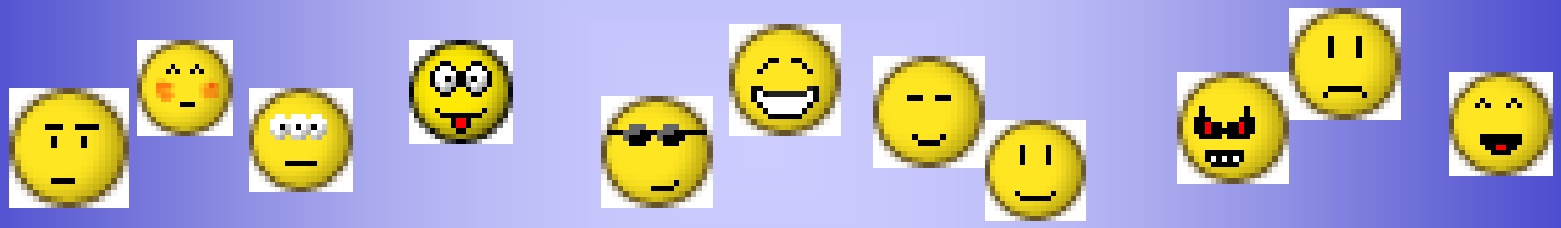
THE BIG QUESTION

- Does this make ham radio "**better**"?
- Define "**better**" and "**radio**"
  - Understanding of *physical environment*
  - Improved *operating skill*
  - Encourage *technical learning*
  - Enable new radio *utilities* and *techniques*
  - New opportunities for *building* and *innovation*
- Remember that "radio" is continually evolving

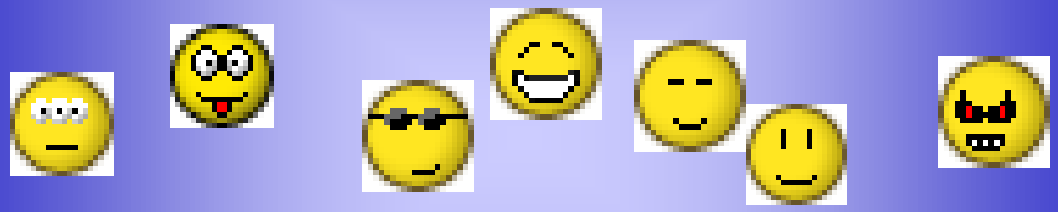
The New Spectrum

- ***Physical radio*** – constant since the 1930's
  - One box, one big knob, meters and dials
- Model of spectrum is "***beads on a string***"
  - Humans decode one bead at a time
  - Better radios throw away more beads

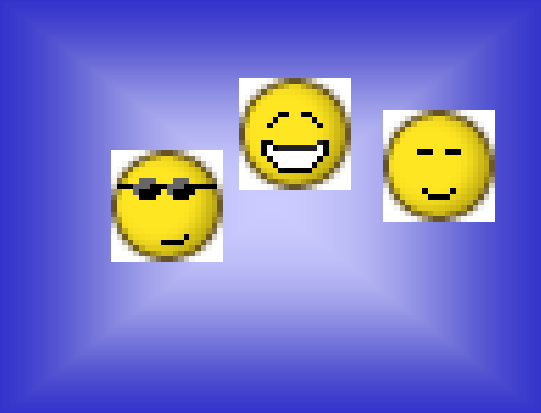
The Band



The Band
“Better Receiver”



The Band
“Better Yet”



The Band
“Best Receiver”

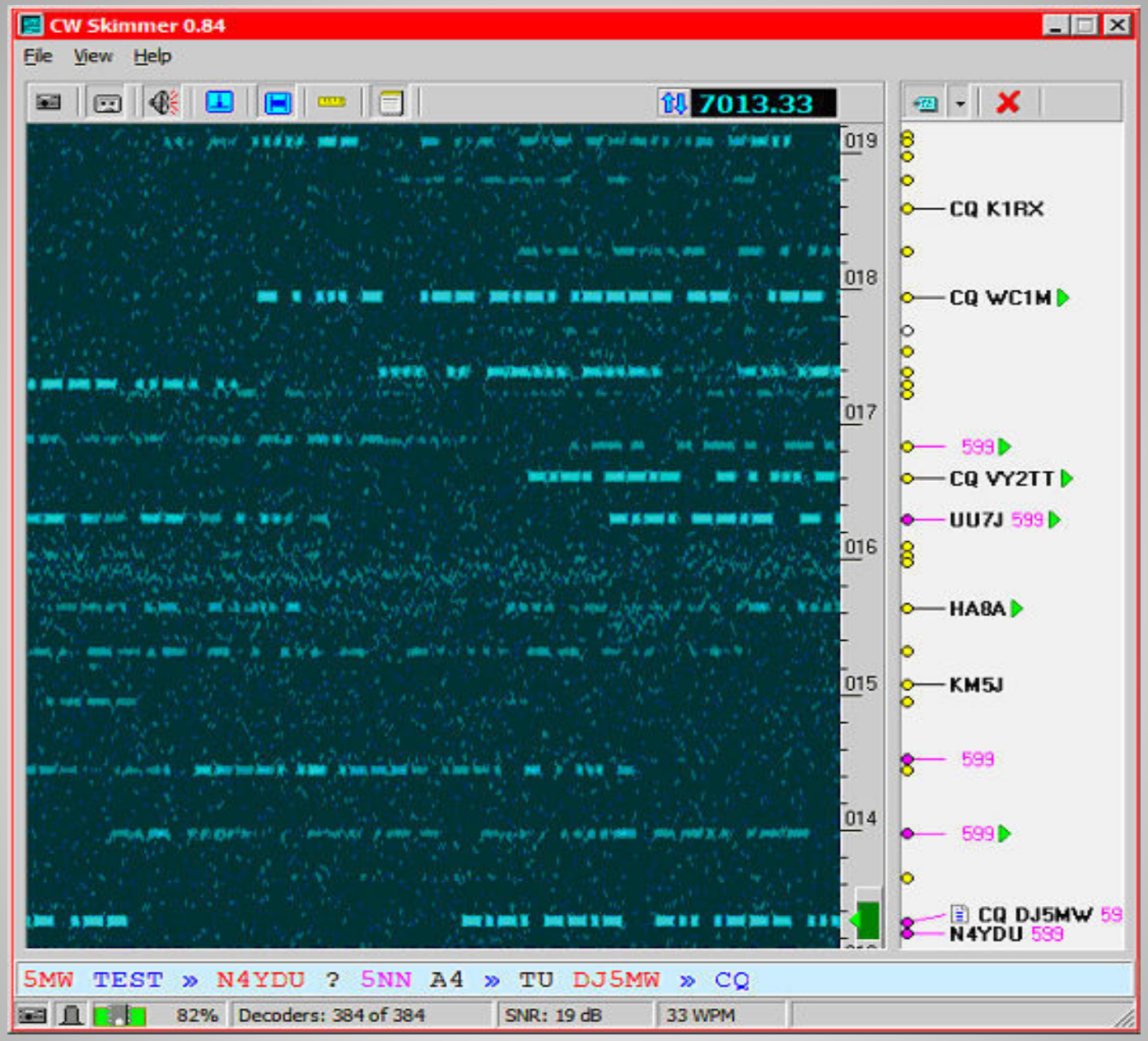
But Where Did Everybody Go??

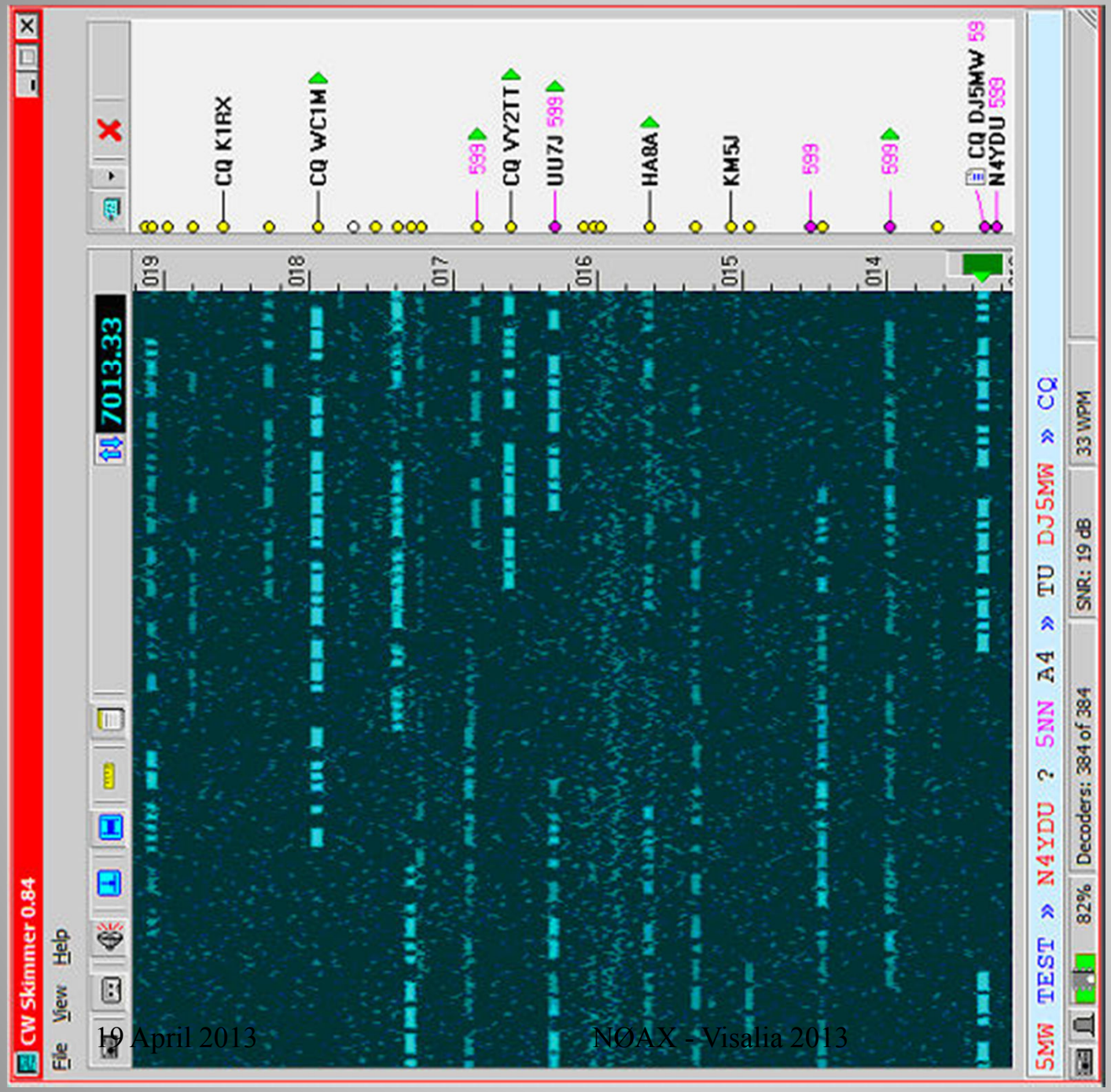
The New Spectrum

- ***Physical radio*** – constant since the 1930's
  - One box, one big knob, meters and dials
- Model of spectrum is "***beads on a string***"
  - Humans decode one bead at a time
  - Better radios throw away more beads
- SDR – ***moves beyond the string***
  - See the info from more signals at once
  - Presents picture of entire spectrum
  - Enables more views or models of the spectrum

More Information

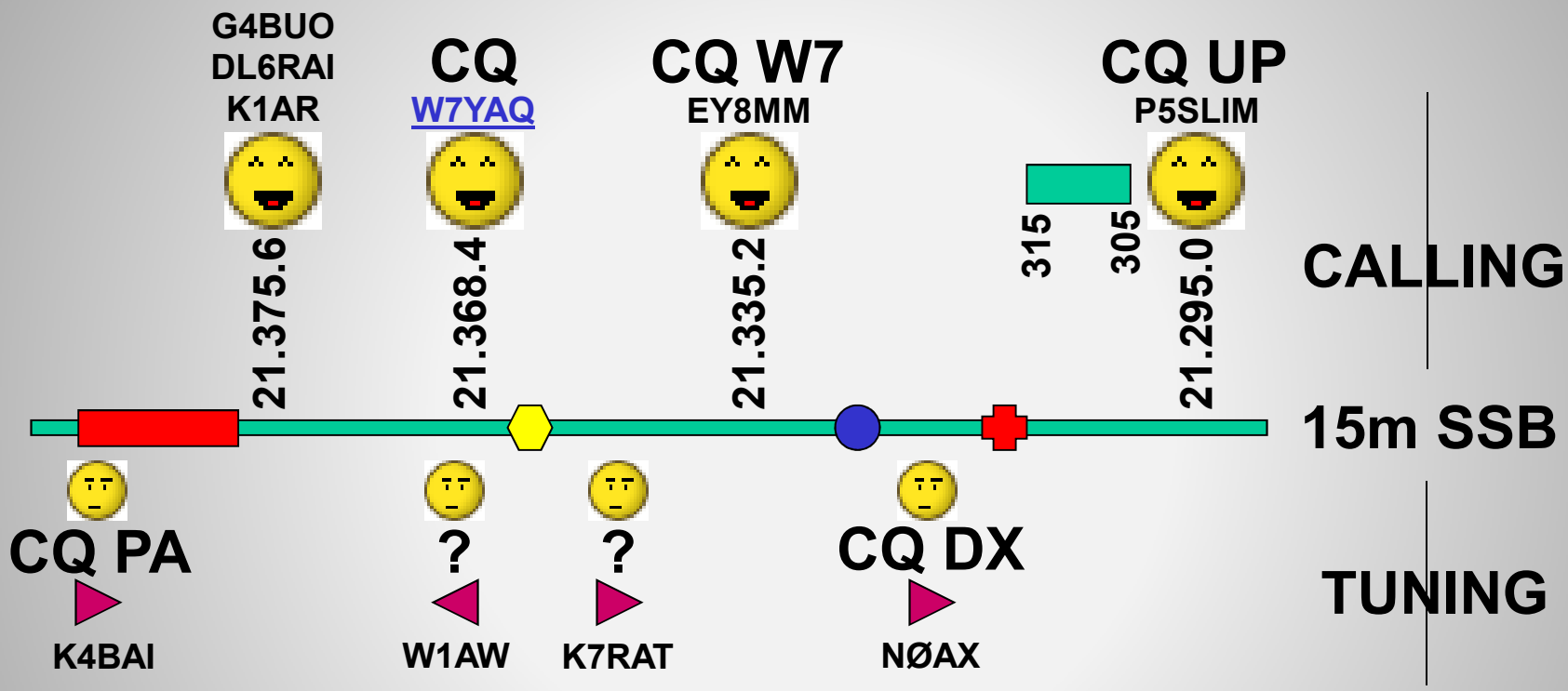
- Receiving just one signal requires *blocking out* everybody else, but...
- New receivers handle more than one signal
  - CW Skimmer
  - Digipan, Fldigi, more on the way
- Internet access
  - provides information “about” the signal
  - stations provide information in real-time


CW Skimmer 0.84
File View Help
7013.33
019
018
017
016
015
014
CQ K1RX
CQ WC1M
599
CQ VY2TT
UU7J 599
HA8A
KM5J
599
599
CQ DJ5MW 59
N4YDU 599
5MW TEST » N4YDU ? 5NN A4 » TU DJ5MW » CQ
82%
Decoders: 384 of 384
SNR: 19 dB
33 WPM



The Ham Radio Matrix?

Smart Band Displays



PA QSO Party - 21.380/21.400

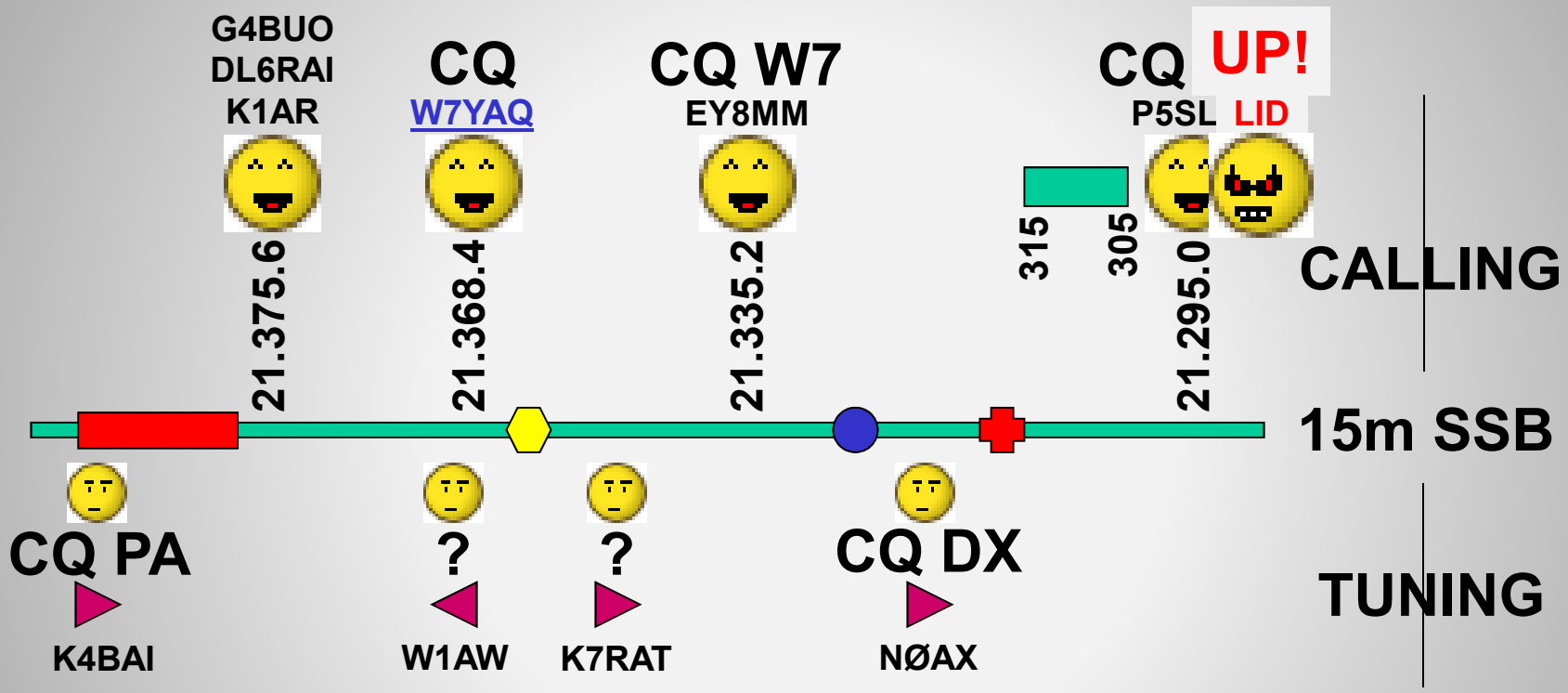
IOTA Calling Frequency - 21.360

Int'l Lighthouse Day - 21.325

Pacific Maritime Net - 21.320

From Master List Server

Smart Band Displays



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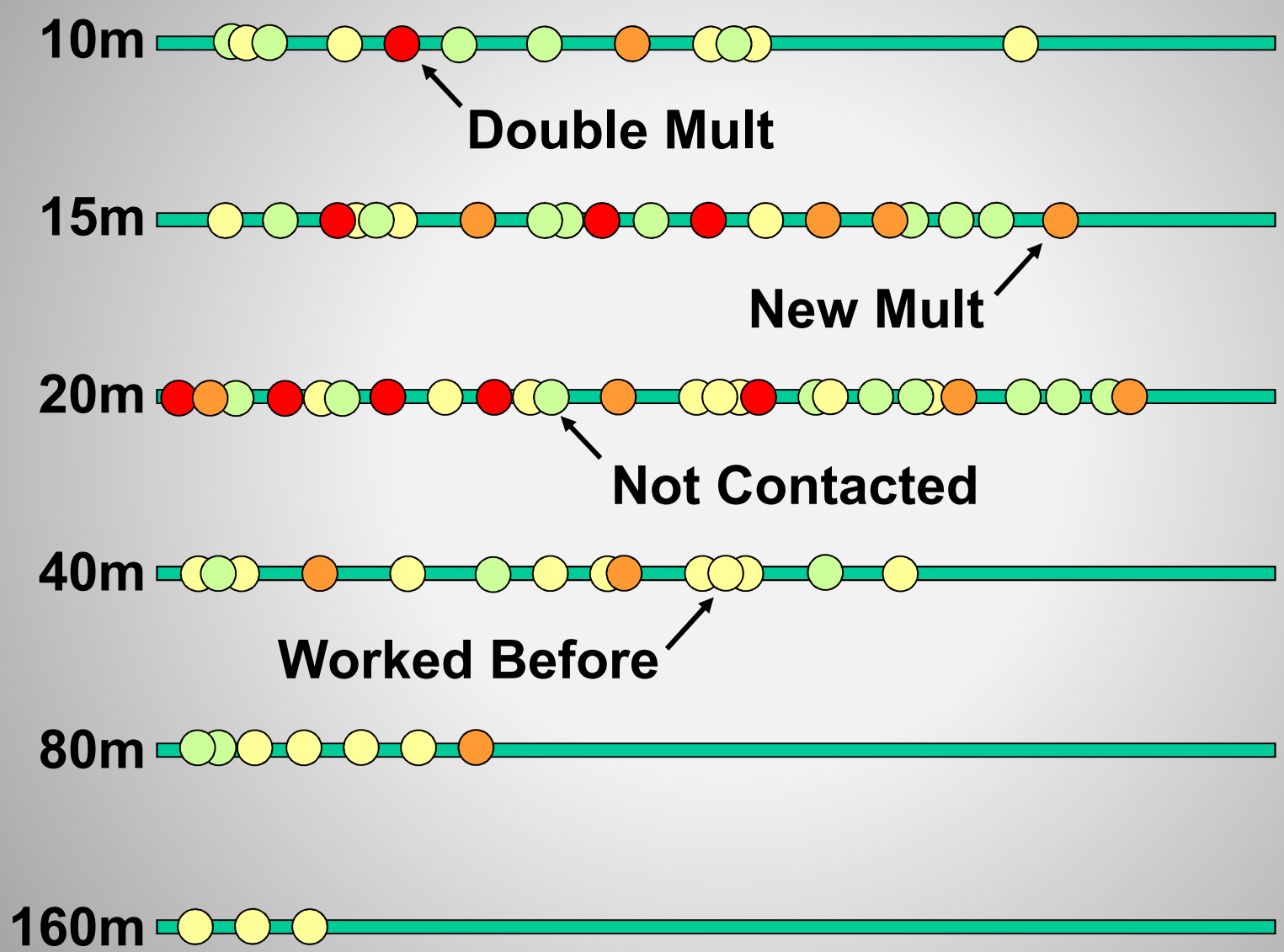
THE DX CONTEST SKIMMER VIEW



THE BIG QUESTION

- Does this make ham radio "**better**"?
- Define "**better**" and "**radio**"
  - Understanding of *physical environment*
  - Improved *operating skill*
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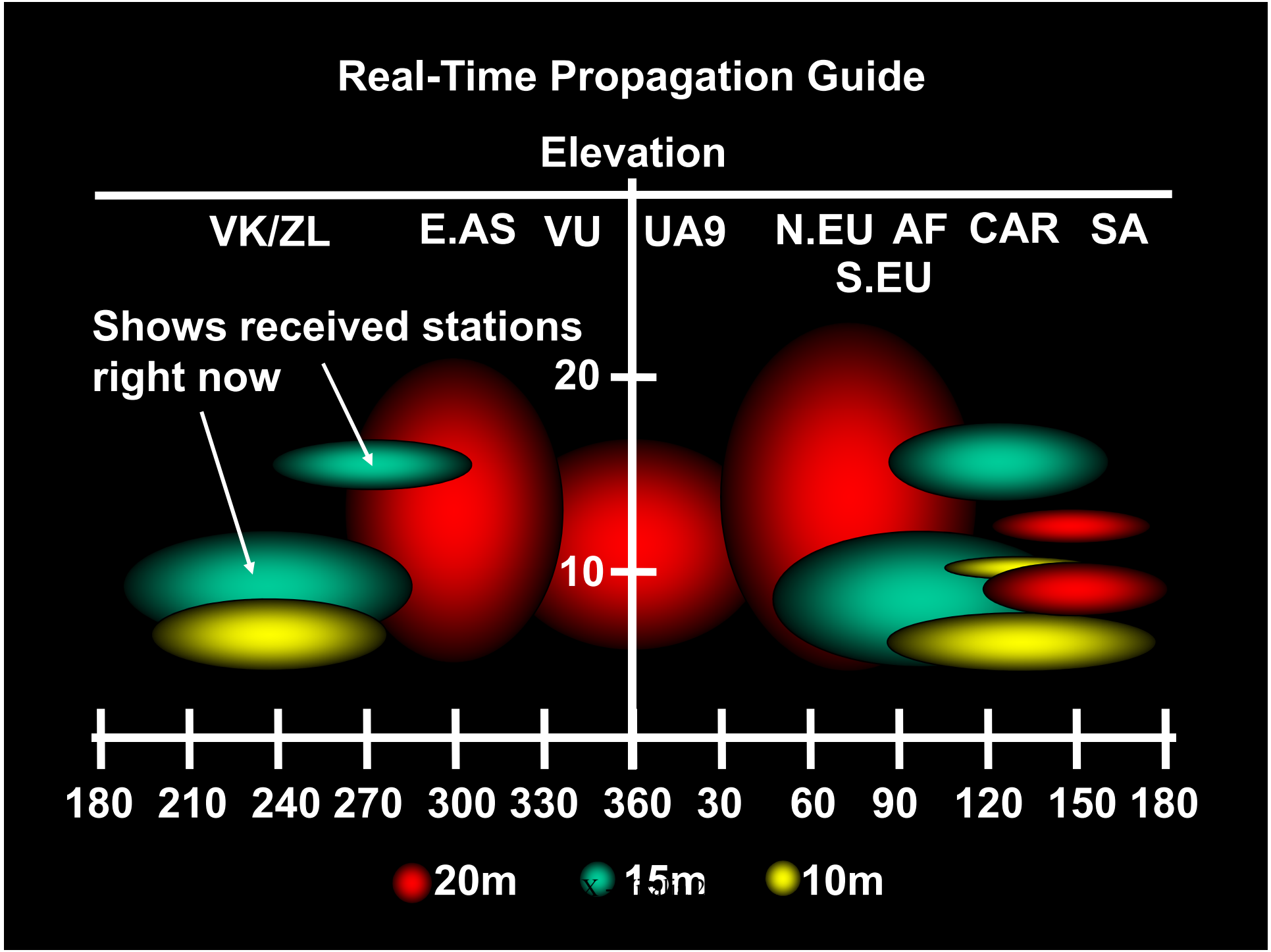
  - Enable new radio *utilities* and *techniques*
  - New opportunities for *building* and *innovation*
- Remember that "radio" is continually evolving

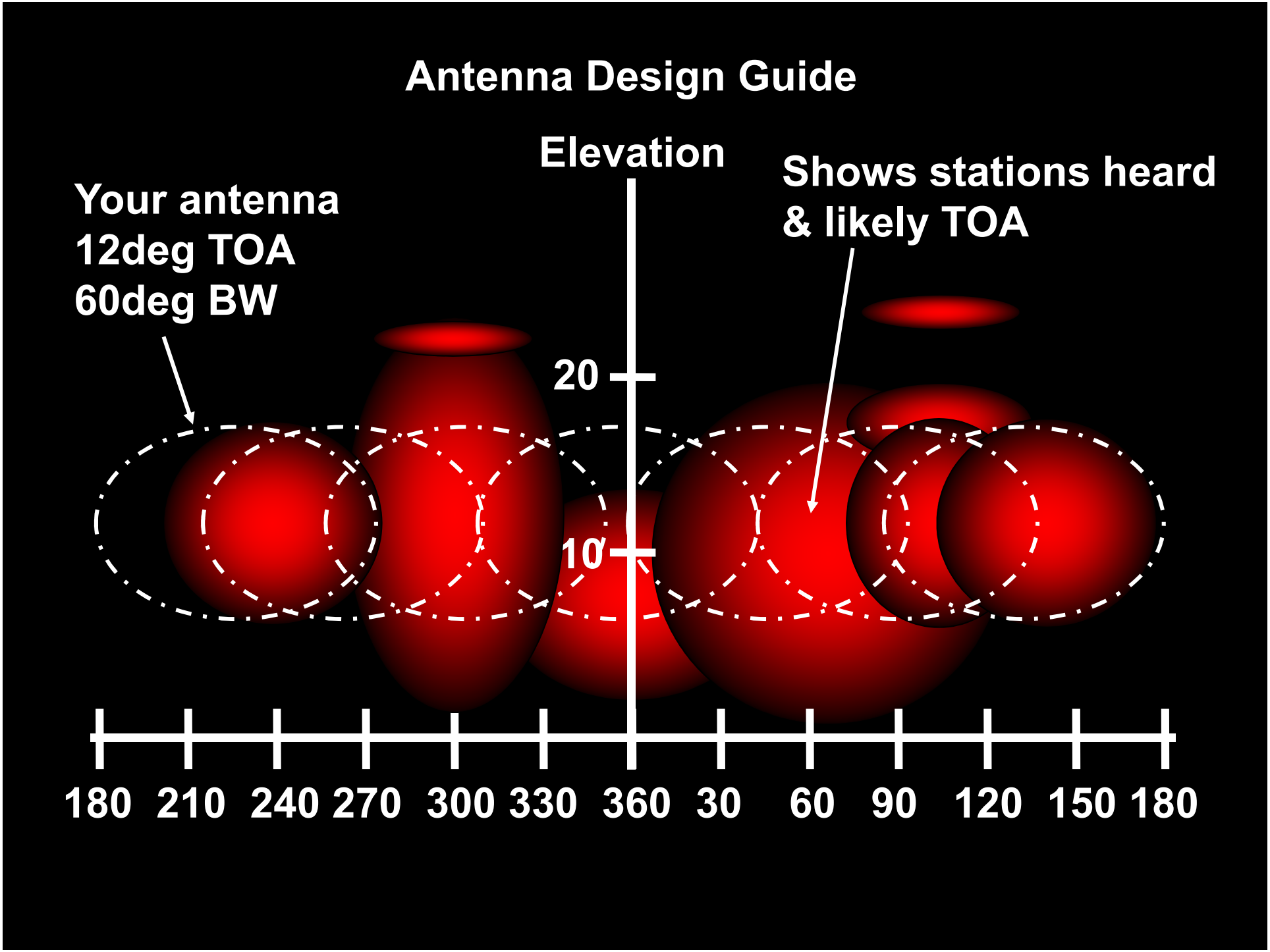
New Eyes

- Radio has primarily emphasized **audible**
- Eyes can take in a lot of **visual** data
- Patterns easier to convey visually
  - In space (**where**)
  - Relationships **between** objects
  - In time (**when**)

Example - “Radio Eyes”

- What if you could see what your antenna system sees?
- Imagine the night sky with each star a radio signal…
- “Where should I be looking?”
- “How can I look to get the best results?”
- N6BV’s angle-of-arrival graphs (HFTA) are a step in the right direction…


Real-Time Propagation Guide
Elevation
VK/ZL
E.AS
VU
UA9
N.EU
AF
CAR
SA
S.EU
Shows received stations
right now
20
10
180 210 240 270 300 330 360 30 60 90 120 150 180
20m
15m
10m

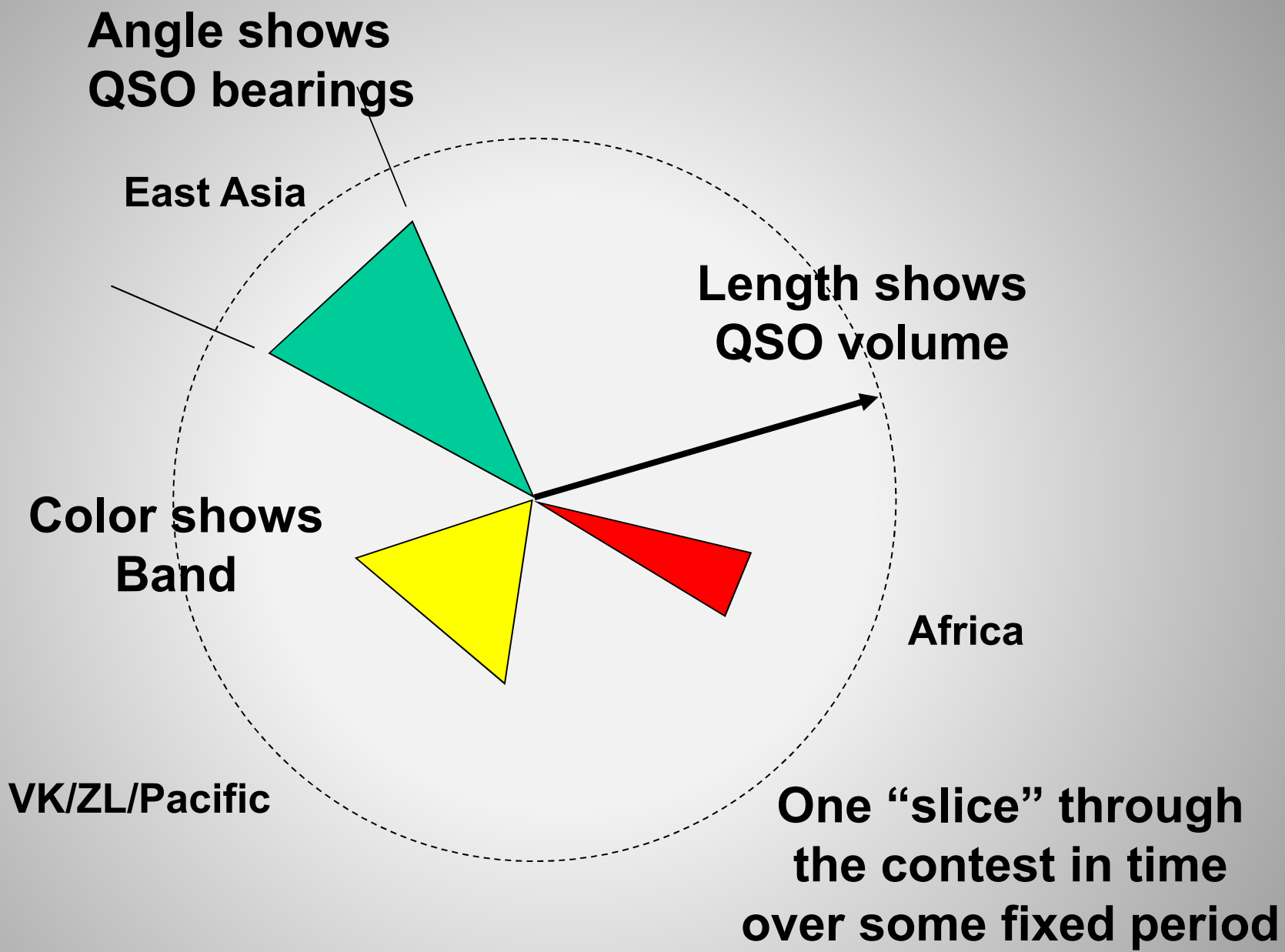

Antenna Design Guide
Elevation
Your antenna
12deg TOA
60deg BW
Shows stations heard
& likely TOA
20
10
180 210 240 270 300 330 360 30 60 90 120 150 180

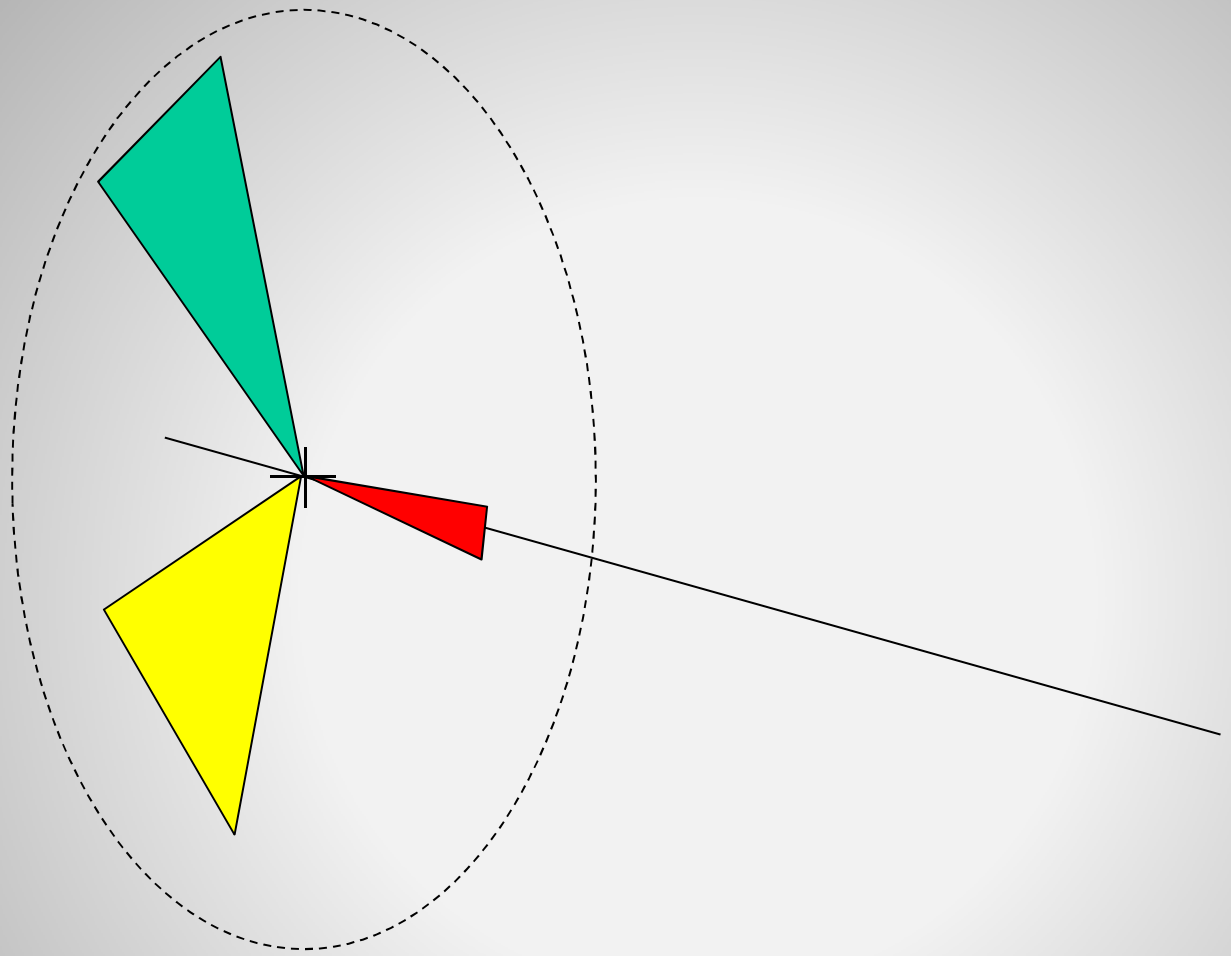
Hybridize

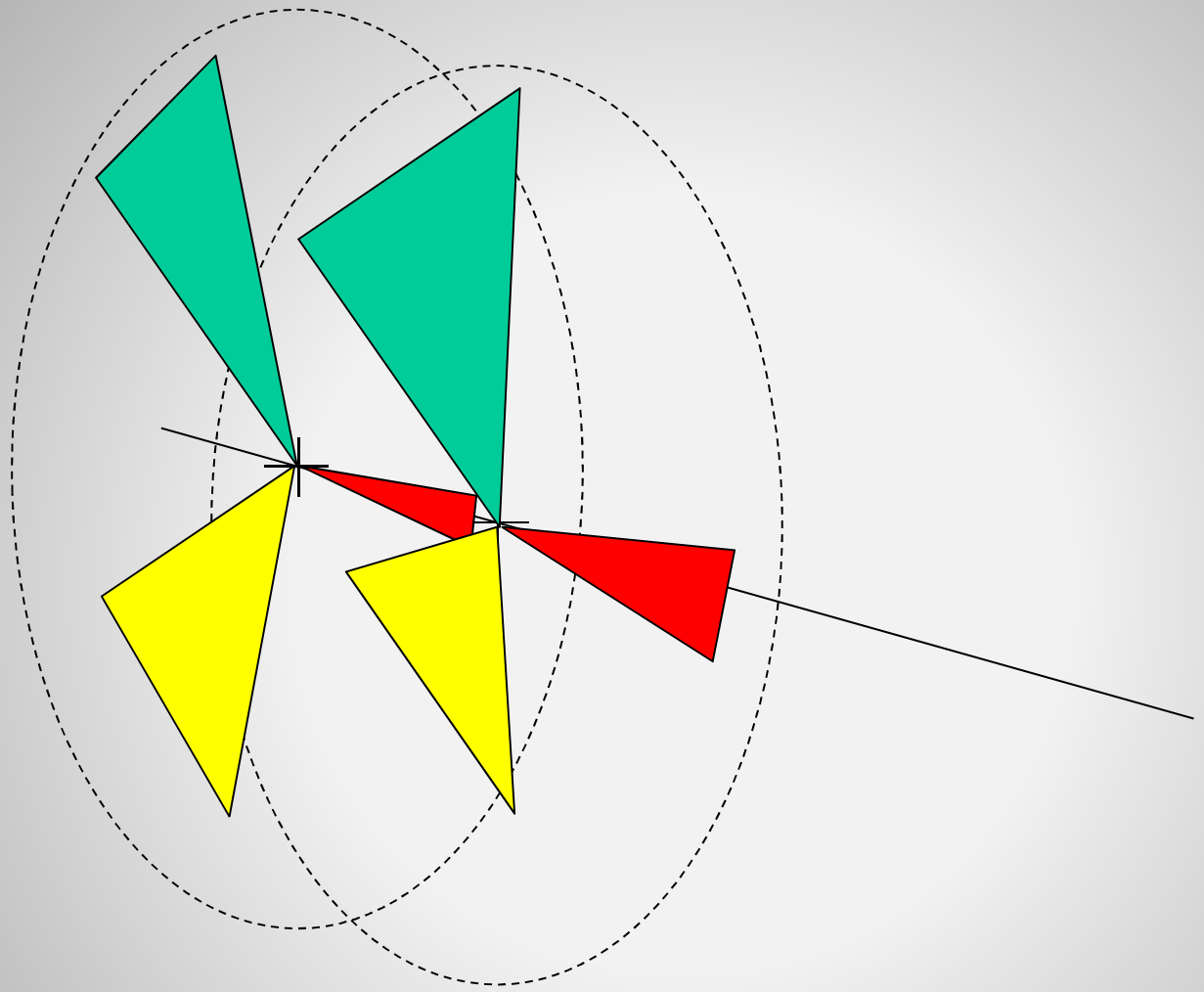
- Merge new **tools** and new **presentations**
- **Hybrids** of computer and radio and networks
- **Integrate** info with new data & displays
- Larger, richer, more visual *playing field*
- Different views and models create different contests and award opportunities
  - New **patterns**
  - New **metrics**

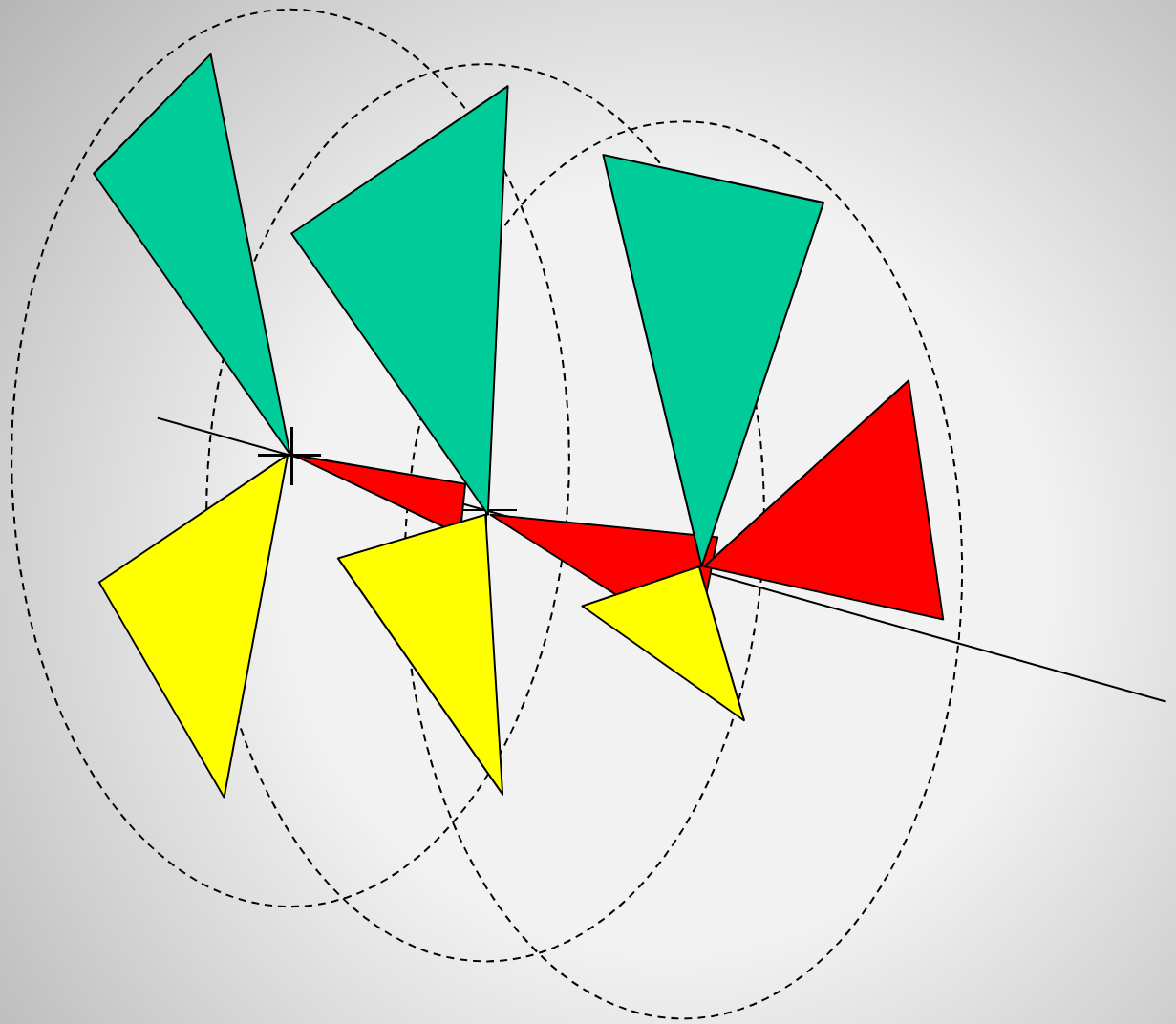
Visualizing Radio Events

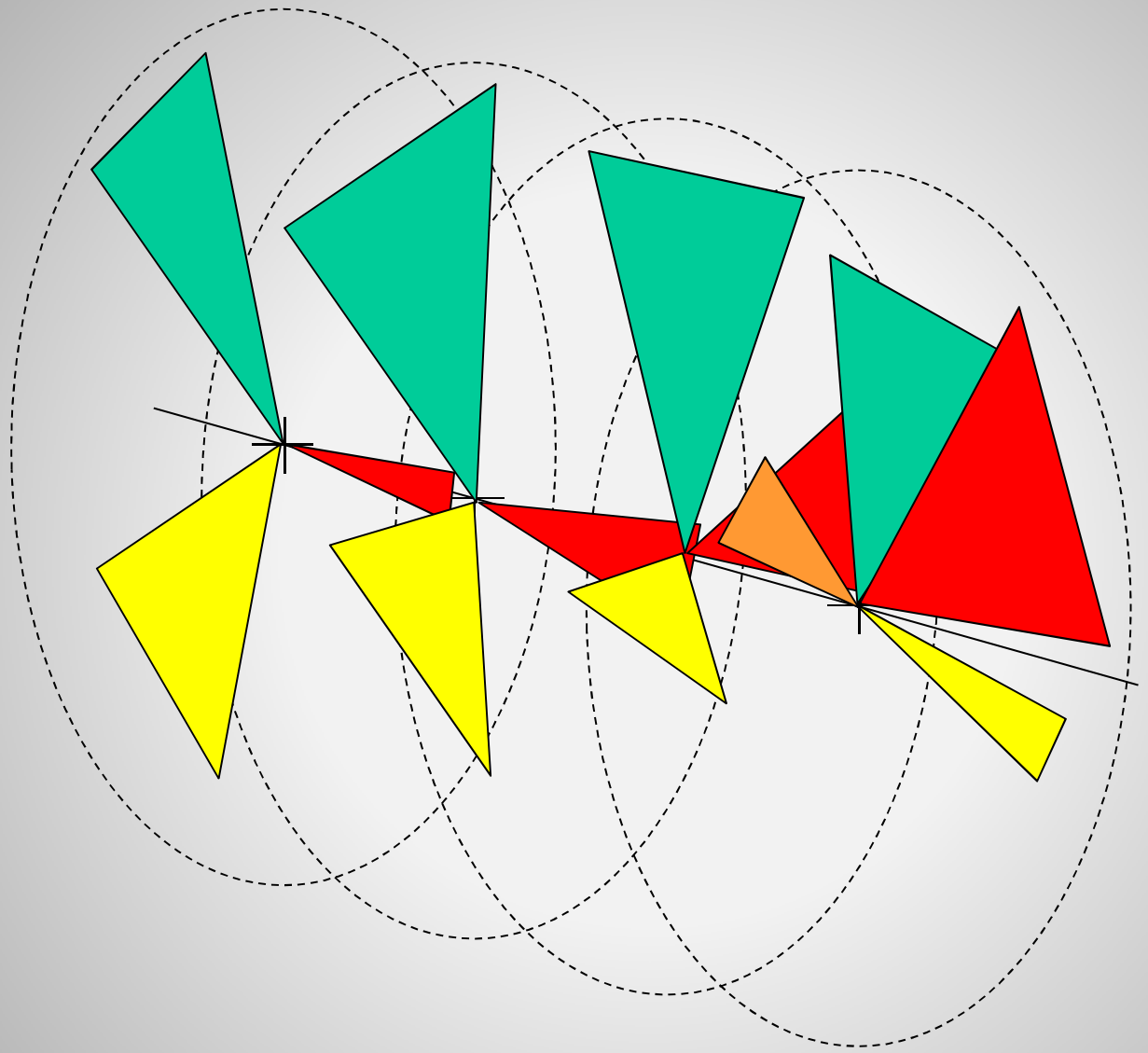
- What does “that was a good contest” mean?
- How do we describe...
  - contests & expeditions
  - openings
  - any event that occurs over extended time
- Need shapes and cues integrated with time


Angle shows
QSO bearings
East Asia
Length shows
QSO volume
Color shows
Band
Africa
VK/ZL/Pacific
One “slice” through
the contest in time
over some fixed period

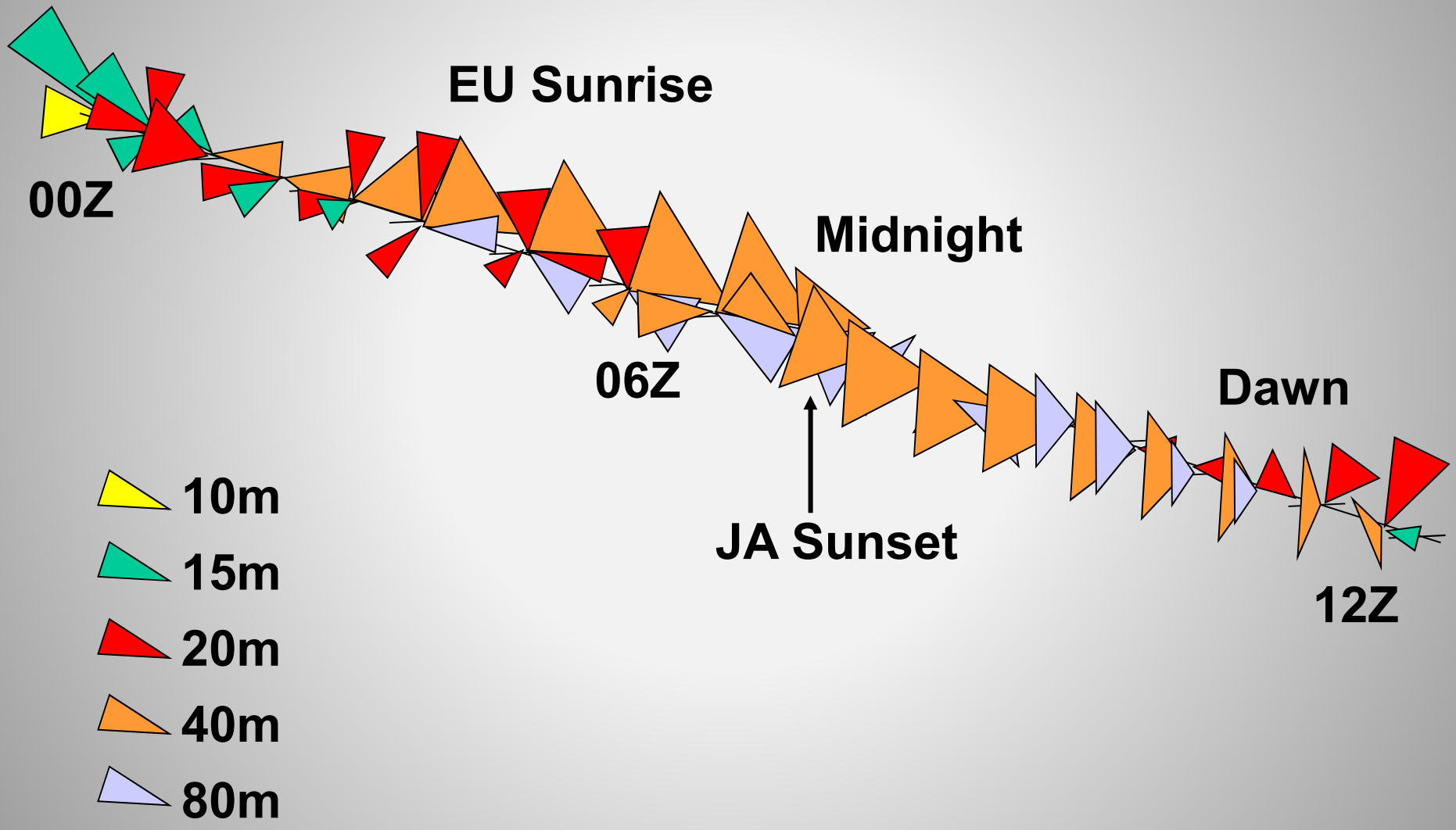








Friday Night from the Pacific NW



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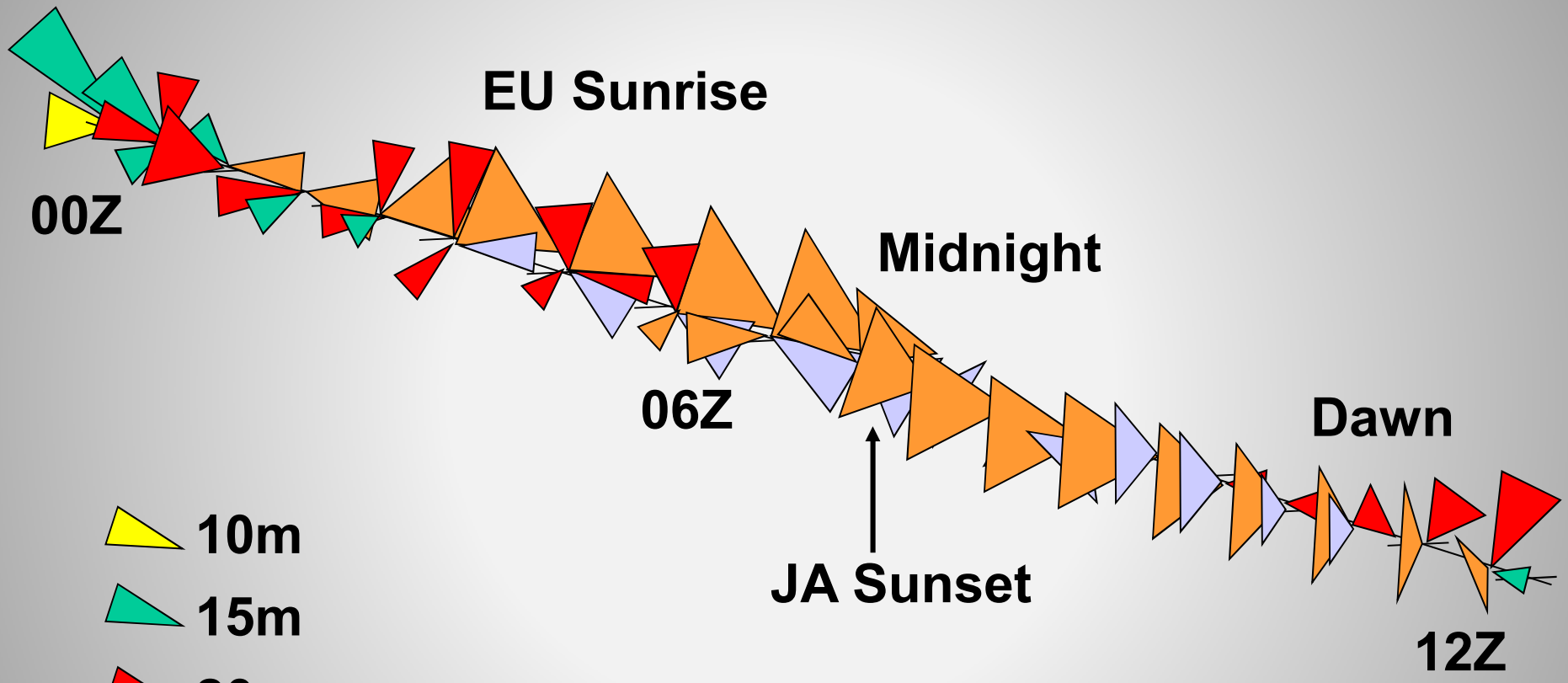


New views of an old activity create new ways to participate!

New Kinds of Contests & Awards

- Improved **visualization** creates new “spaces” in which to play
- Internet enables real-time contact validation
- Add new elements…
  - time value
  - coverage
  - relationships
- Key – Emphasize “Radio Know-How”

Collaboration

- Ripe for new forms of **teams** and **clubs**
  - CQ WW Xtreme category
- Operators **linked** across large distance
  - violation of most current rules
- More **multi-op** opportunities
  - M2 is fastest growing category in M/O
- Expand operation beyond 1-on-1 QSOs
  - WAE QTC example

Scoring

- **Degree of difficulty** scoring
  - Distance
  - Bearing
  - Propagation
- **Rate** (QSOs or mults or ???)
- **Coverage** (geographic or theme of contest)

Performance Metrics

- **Quality** metrics
  - Accuracy
  - Presentation or style
- **Peer** comparisons (WRTC rankings)
- New methods of **visualizing** contesting

Formats

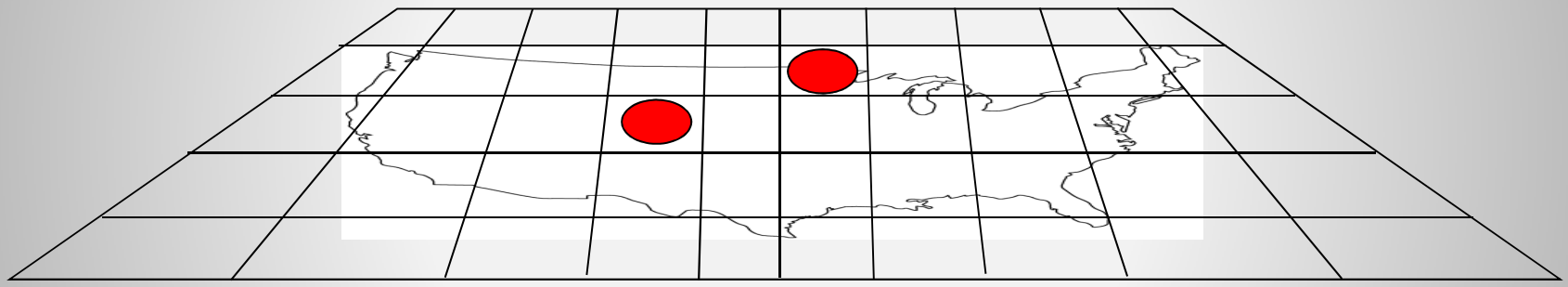
- Shorter, focused contests
- More emphasis on **strategy**
- Integrate computer technology
- Co-located (like WRTC)
- Contests-within-a-contest
- Contests-of-many-contests

Real-Time

- **Real-time** scoring with 24/7 connectivity
  - Web-based logging or PC program
  - Real-time QSO validation & reporting
  - Instant results
- Similar to *credit-card transaction* software
  - Hosted by contest sponsor's server
- **Spectator** interaction via Web browser
  - Getscores, cqcontest.ru, and InTheLog are a start

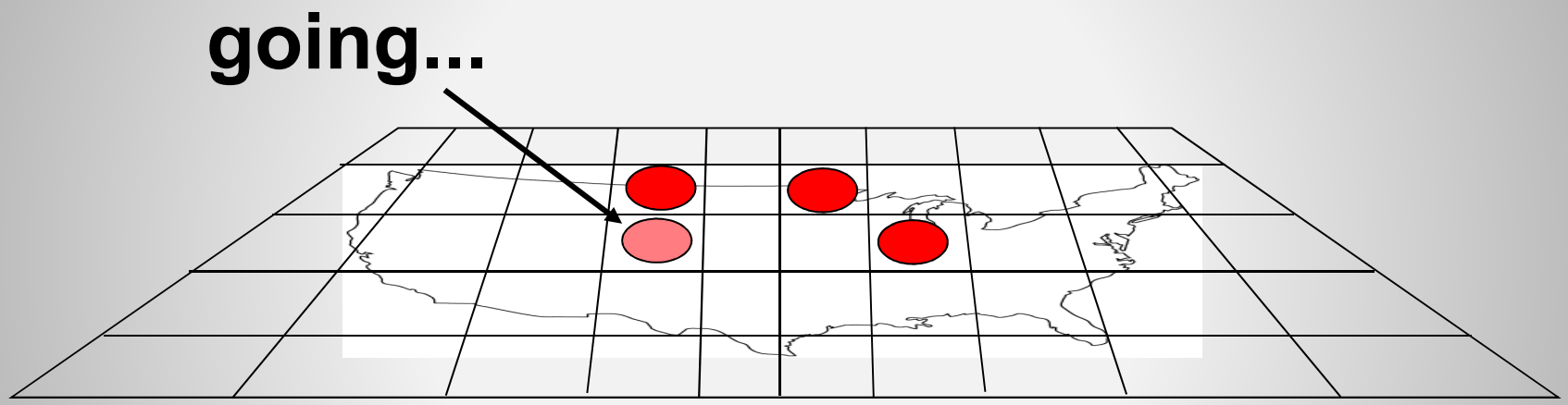
New Contest Ideas

The Coverage Contest - “Radio Go”



The object is to maintain coverage of as many grids as possible for as long as possible

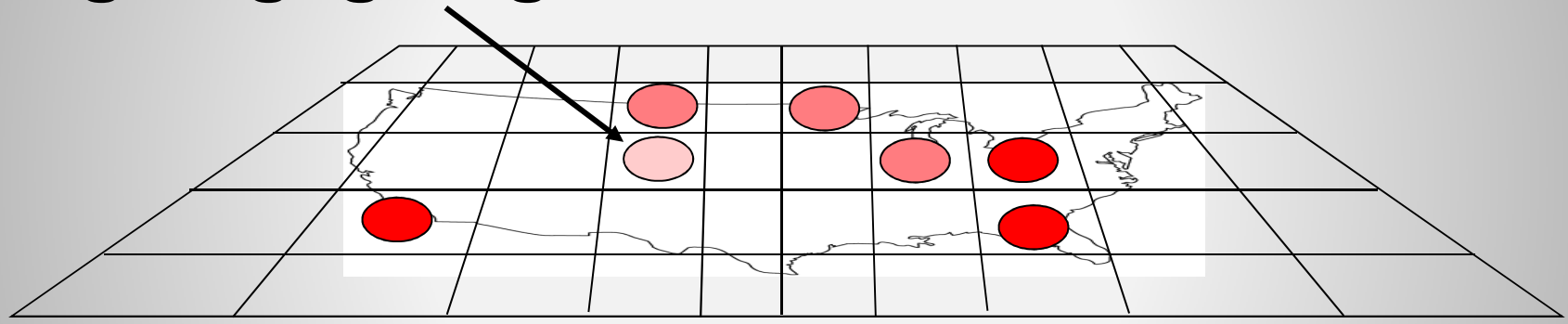
The Coverage Contest - “Radio Go”



…but the contacts “evaporate”!

The Coverage Contest - “Radio Go”

going, going...



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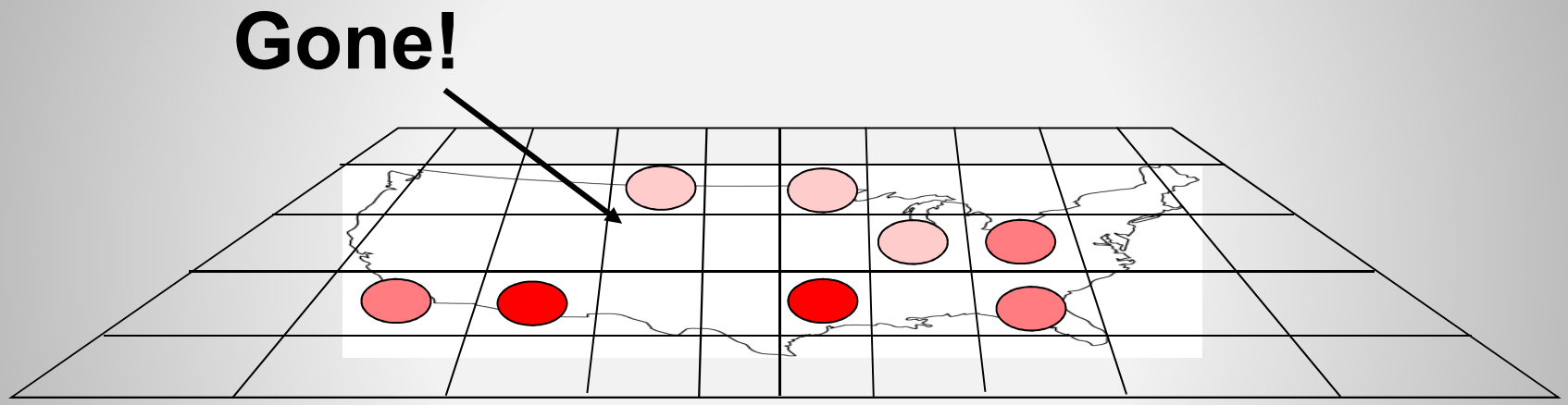

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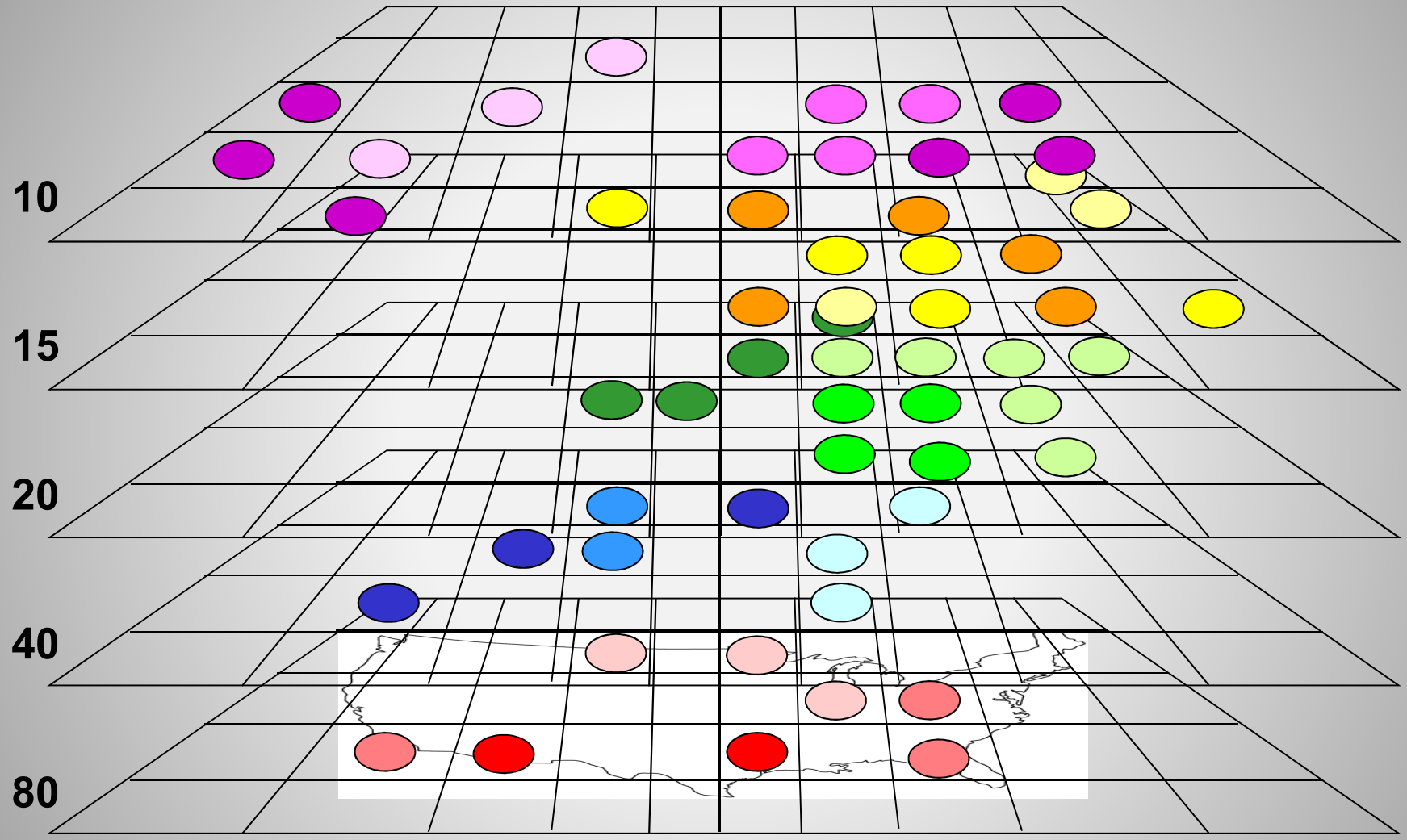
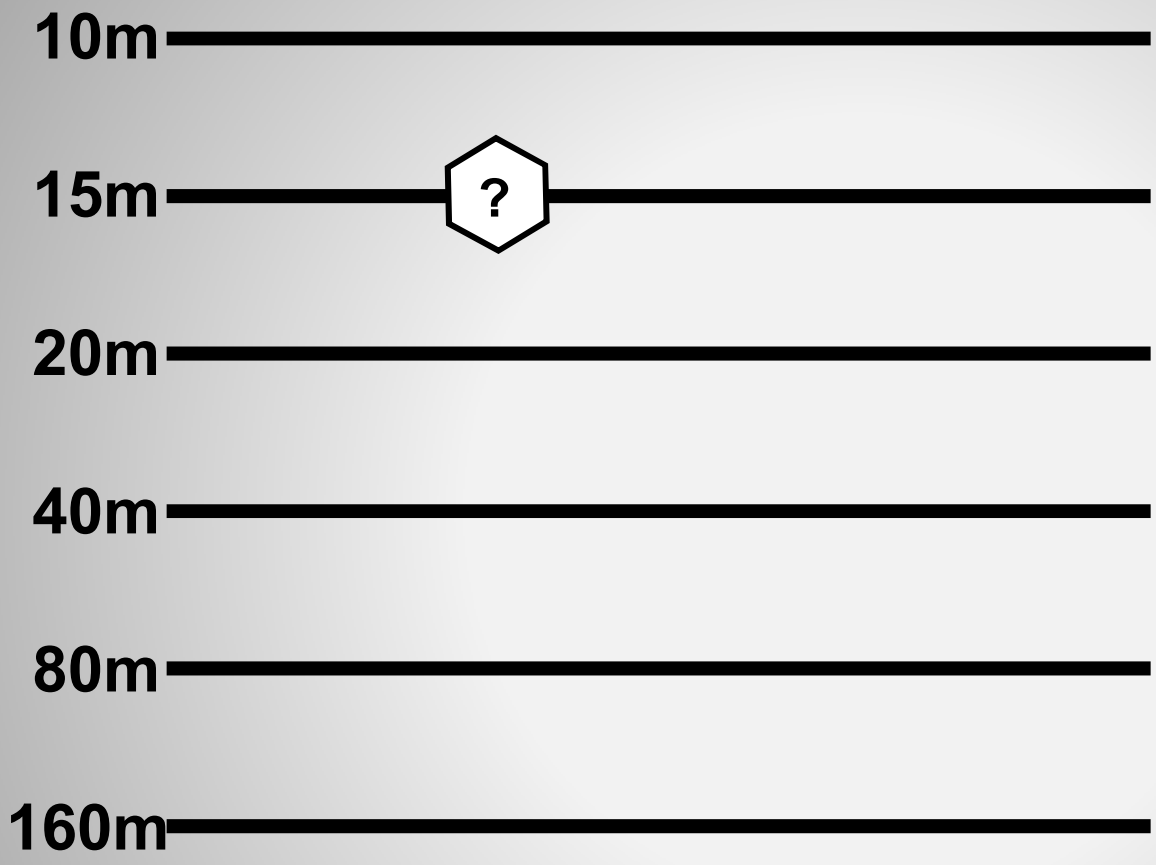


Each worked grid “fades out” with time

The “Skeet Shoot” Contest

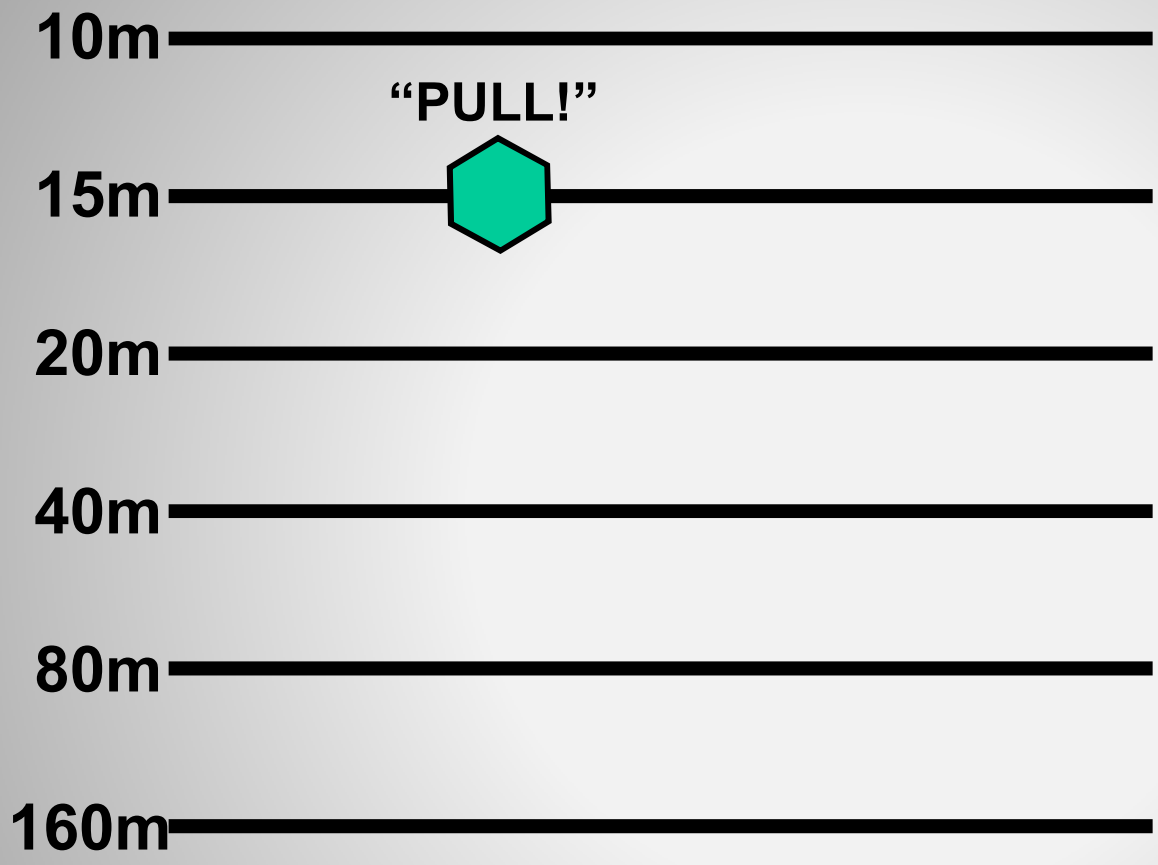


Potential target
<u>appears</u>
-Accept/Reject
-Value falls with time

NØAX/9X 21.043 1635Z

Participants watch streams from public spotting networks
Each spot is time-stamped
Sponsor also records the spots

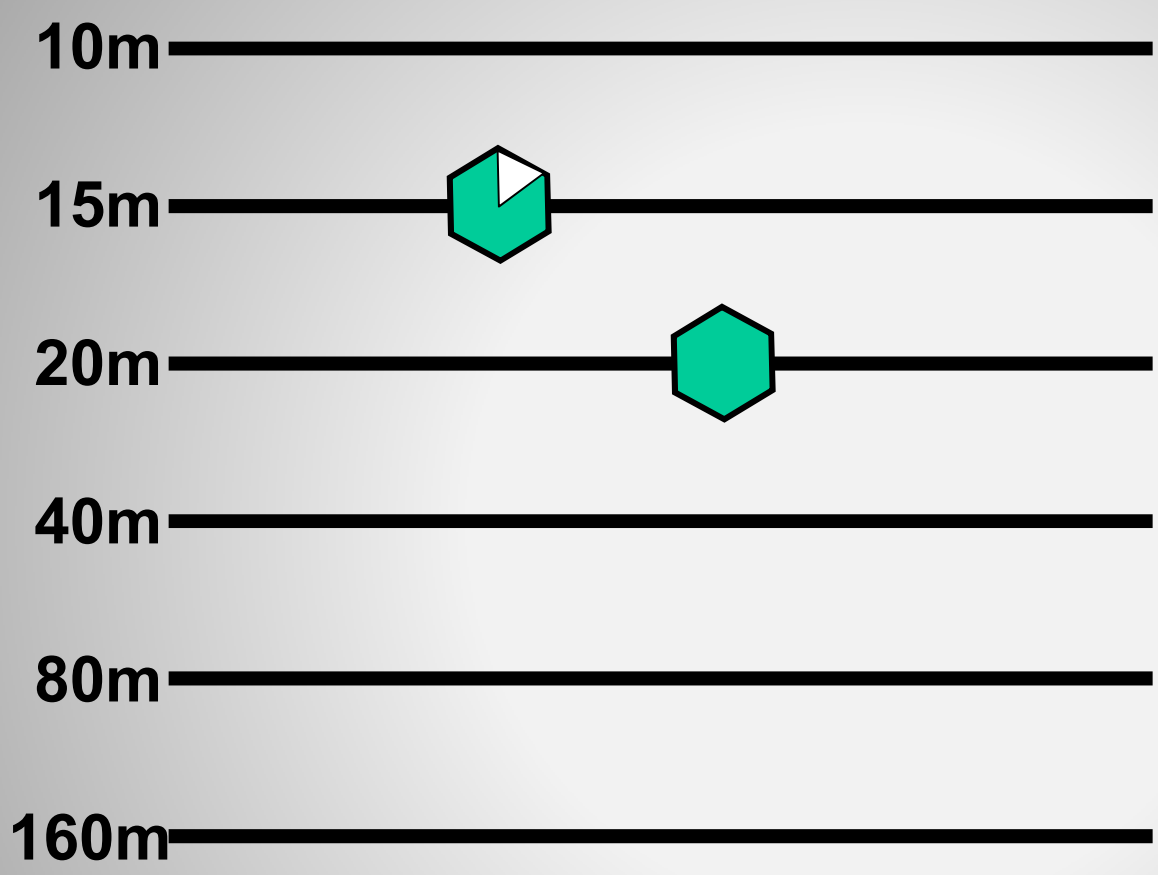
The “Skeet Shoot” Contest



Participant is allowed six “shots” (calls) to work the station, with value falling after each missed shot

Symbols show new “targets”

The “Skeet Shoot” Contest

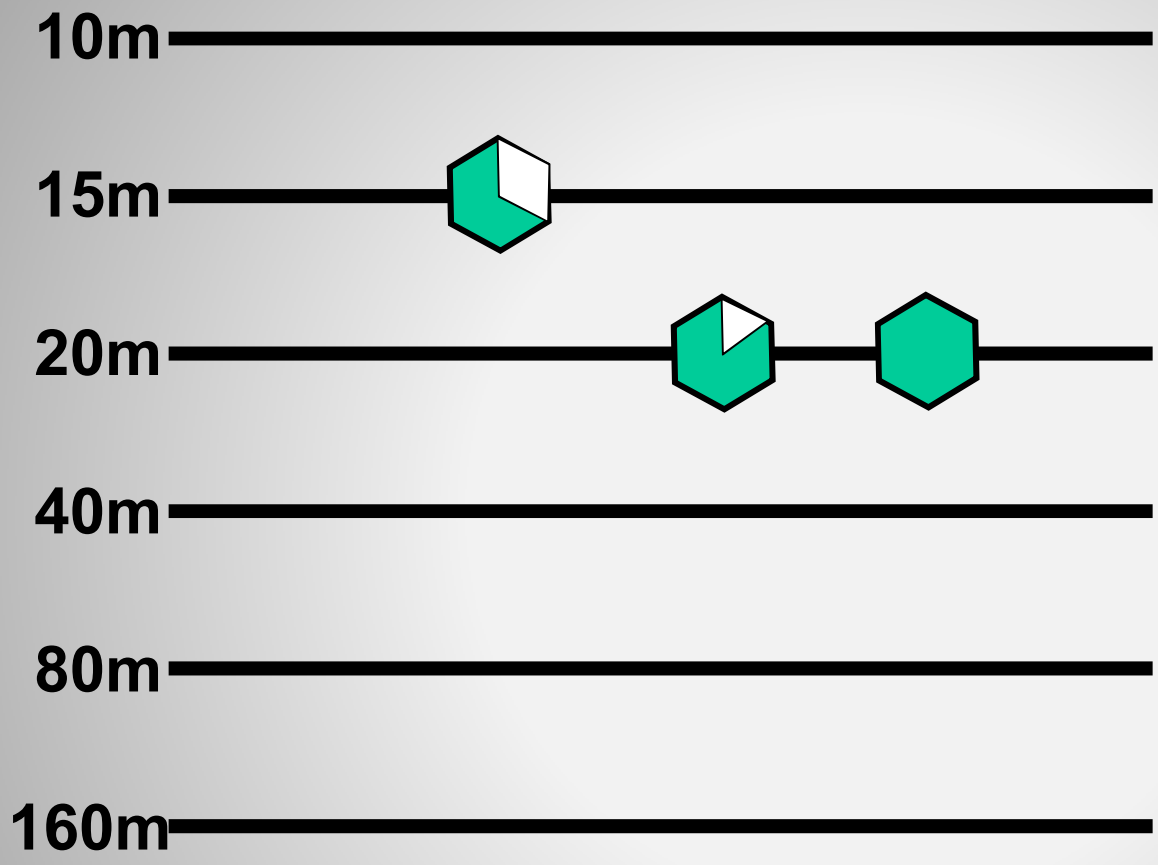


1st Target = 5 pts

New Target = 6 pts

Target changes to show
reduced value with each shot

The “Skeet Shoot” Contest

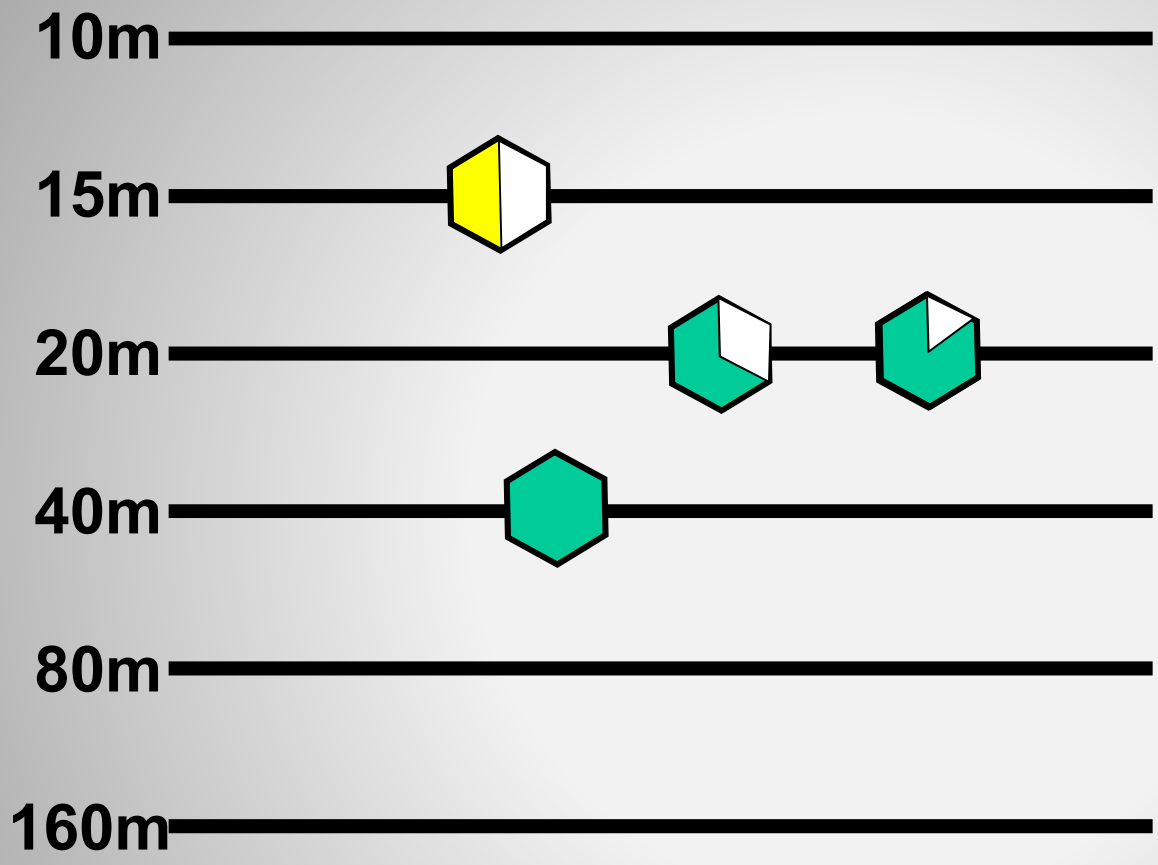


1st Target = 4 pts

5 and 6 pt targets

Targets can appear anywhere
You select which ones to “shoot” at

The “Skeet Shoot” Contest



Down to 3 points!

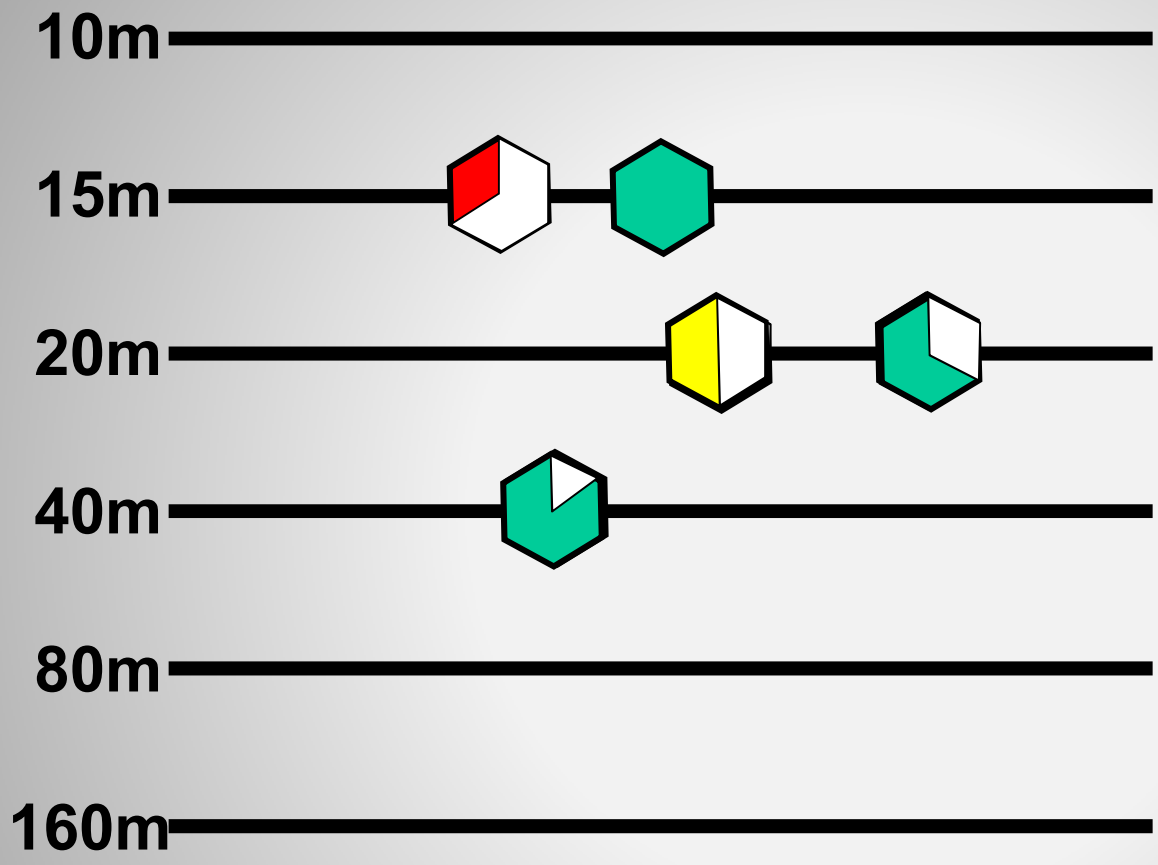
4 and 5 pt targets

You accept targets based on “know-how”

-Station and operating capabilities

-knowledge of propagation

The “Skeet Shoot” Contest

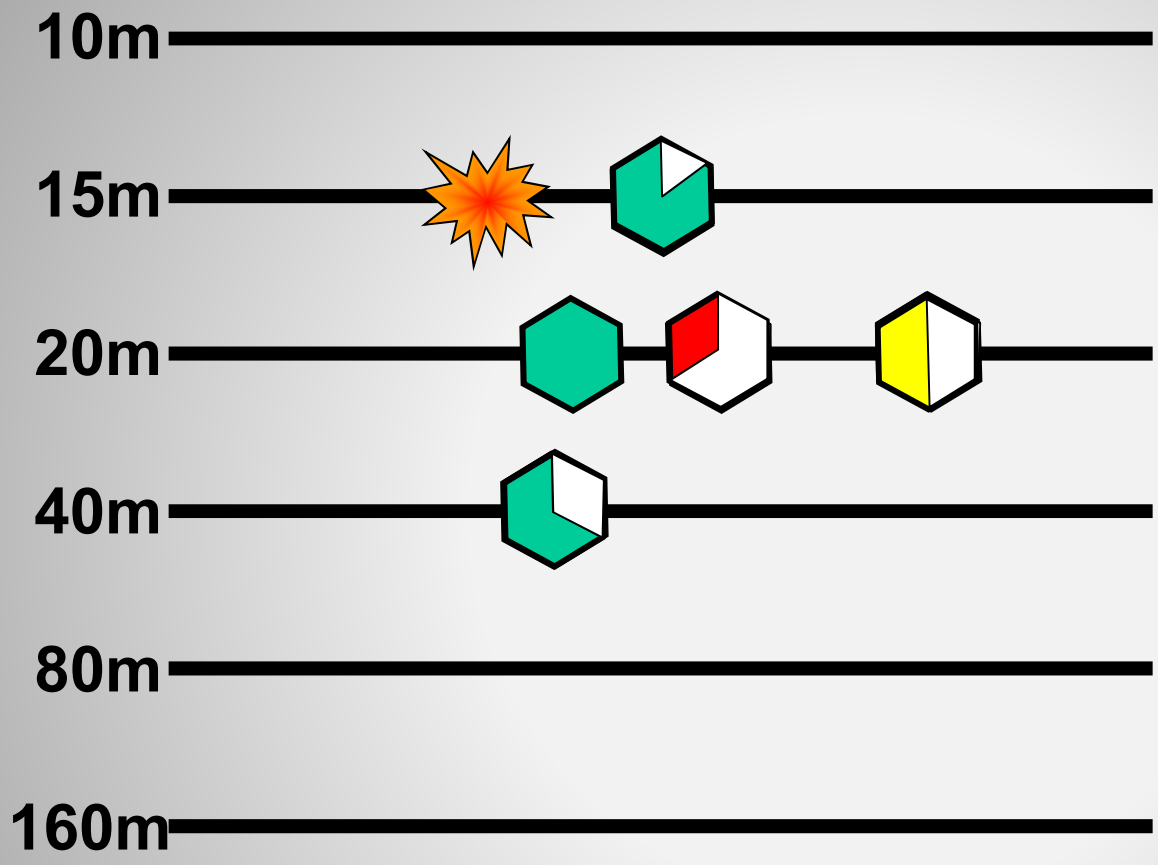


Down to 2 points!

3 and 4 pt targets

You get a lot of clocks ticking!

The “Skeet Shoot” Contest

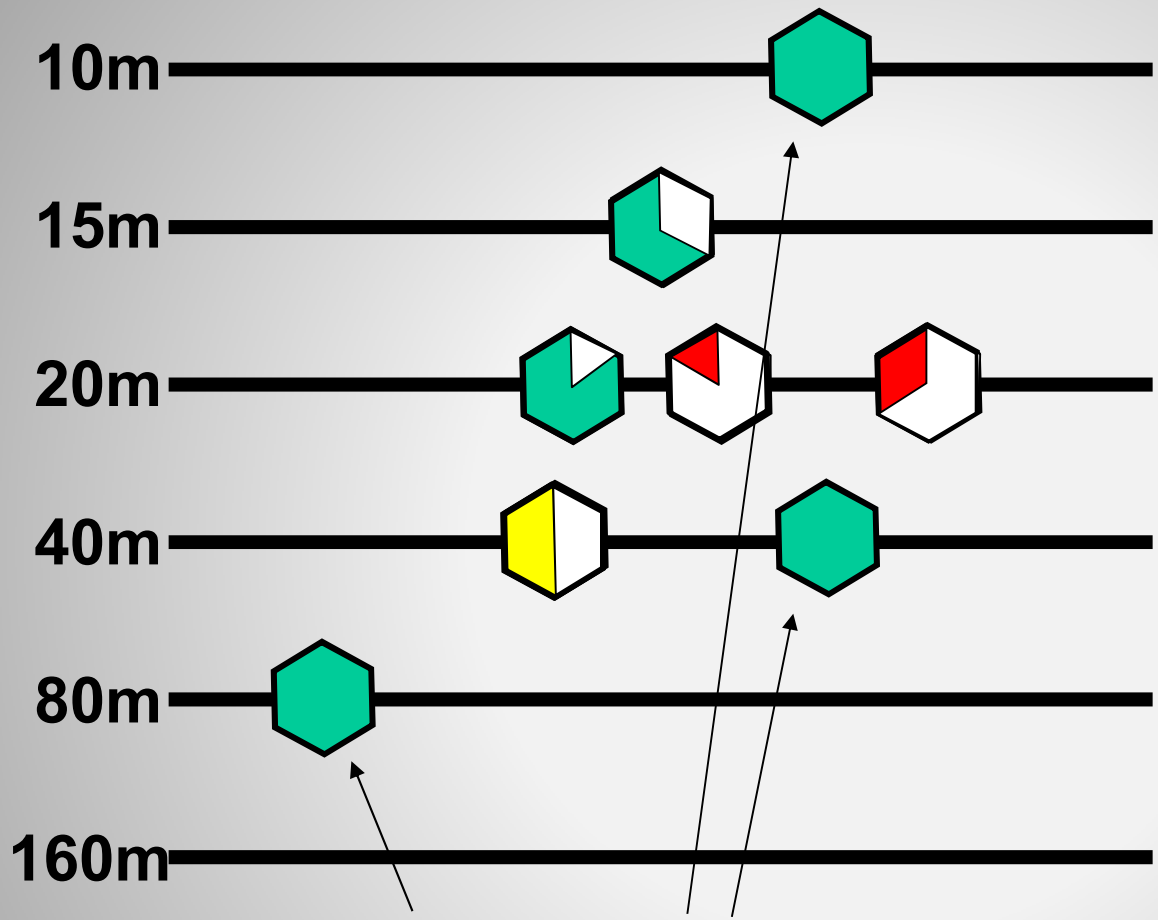


Got ‘em!

6, 2, and 3 pt targets

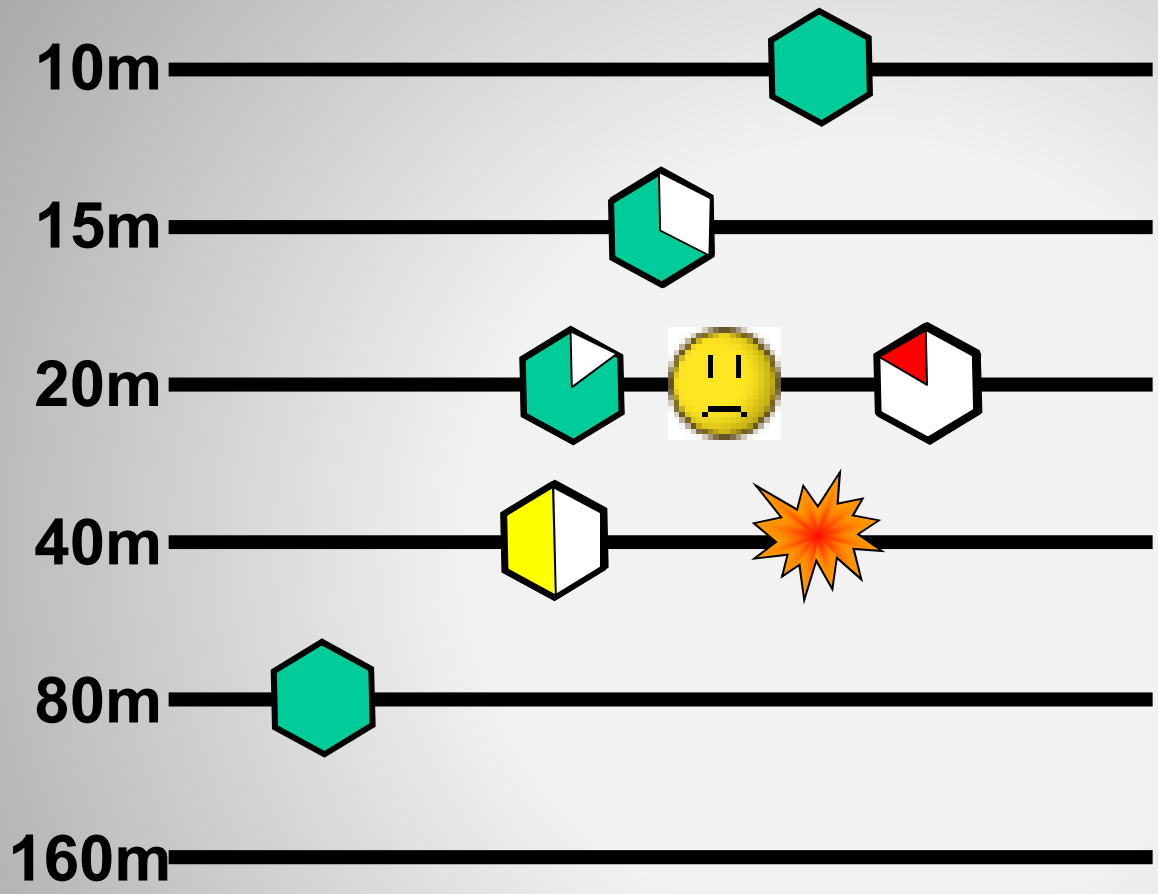
You have to know propagation to know which targets to chase

The “Skeet Shoot” Contest



There may be more than one new target at a time!

The “Skeet Shoot” Contest



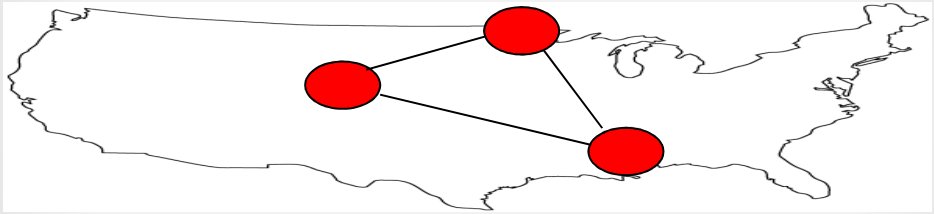
Targets can “expire”

A high-value score!

But who calls CQ – an open question!

The Linkage Contest – Beyond QTC

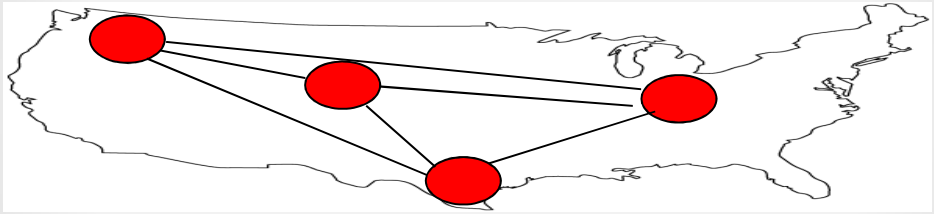
3 x 3 = 9 pts



The object is to make multi-station QSOs, exchanging & logging random numbers, more stations count for more points

The Linkage Contest – Beyond QTC

4 x 4 = 16 pts



More stations in the linkage count for more points, but it's harder to arrange and complete the exchanges

WAN-Slam

- All VHF/UHF/Microwave bands
- Form ad hoc networks to exchange data
- Points accumulated by…
  - total path **distance**
  - **number** of links
  - average **speed** of transmission in bps
  - path bit **error** rate

2020 DX Contest

- QSO Points: 0-3 from 6-digit locator
- M/M/M: teams linked by Internet share audio and video
- Real-time scoring
  - Validated score and QSOs in real-time
  - Web page viewer
- Spectator page with stats, streaming multimedia, scoring statistics and analysis

2020 DX Contest

- QSO Points: 0-3 from 6-digit locator
- M/M/M: teams linked by Internet share audio and video
- Real-time scoring
  - Validated score and QSOs in real-time
  - Web page viewer
- Spectator page with stats, streaming multimedia, scoring statistics and analysis
- Plaques mailed 30 minutes after the contest!

What About Awards?

- Traditional awards will remain
  - Will require additional verification
  - Elements not available electronically
  - “Fingerprints” of the QSO?
  - Digital “signing” of a QSO?
  - Seekrit knocks?

What About Awards?

- Location will be the challenge
  - Remote operation already occurring
  - Peer review?
  - Automated decoders with signal strength analysis
    - Who's going to pay for that?

What About Awards?

- Location will be the challenge
  - Remote operation already occurring
  - Peer review?
  - Automated decoders with signal strength analysis
    - Who's going to pay for that?
  - There's always the *honor system!*

The 2020 DX Awards

- Near real-time confirmation and validation of contacts
- Signal strength logged on both ends
- “Connected” versus “Unconnected”
- Awards for combining elements
- Confirmations that expire?
- More fixed-period or “random” aspects

THE BIG QUESTION

- Does this make ham radio "**better**"?
- Define "**better**" and "**radio**"
  - Understanding of *physical environment*
  - Improved *operating skill*
  - Encourage *technical learning*
  - Enable new radio *utilities* and *techniques*
  - New opportunities for *building* and *innovation*
- Remember that "radio" is continually evolving

THANK YOU!!