

The Future of DX

Robert W. Schmieder KK6EK

International DX Convention
Visalia, CA
23 April 2017

**DX IS STILL A
THING!**

Entities...



DXpeditions...

Track a Vessel | Marine | X | Announced DX Operations | X

www.ng3k.com/misc/adxo.html

NG3K Home **AD XO** Contest DXCC QIS-Pfx

Announced DX Operations

[\[About AD XO\]](#) [\[Search AD XO\]](#) [\[AD XO Text Version\]](#) [\[Abbreviations\]](#) [\[Submit a DXpedition\]](#) [\[ICAA DXCAL link\]](#)

Active Expired 2017 2016 2015 2014 2013 2012 2011 2010 2009 2008 2007 2006 2005 2004 2003 2002 2001 2000 1999 1998 1997 1996

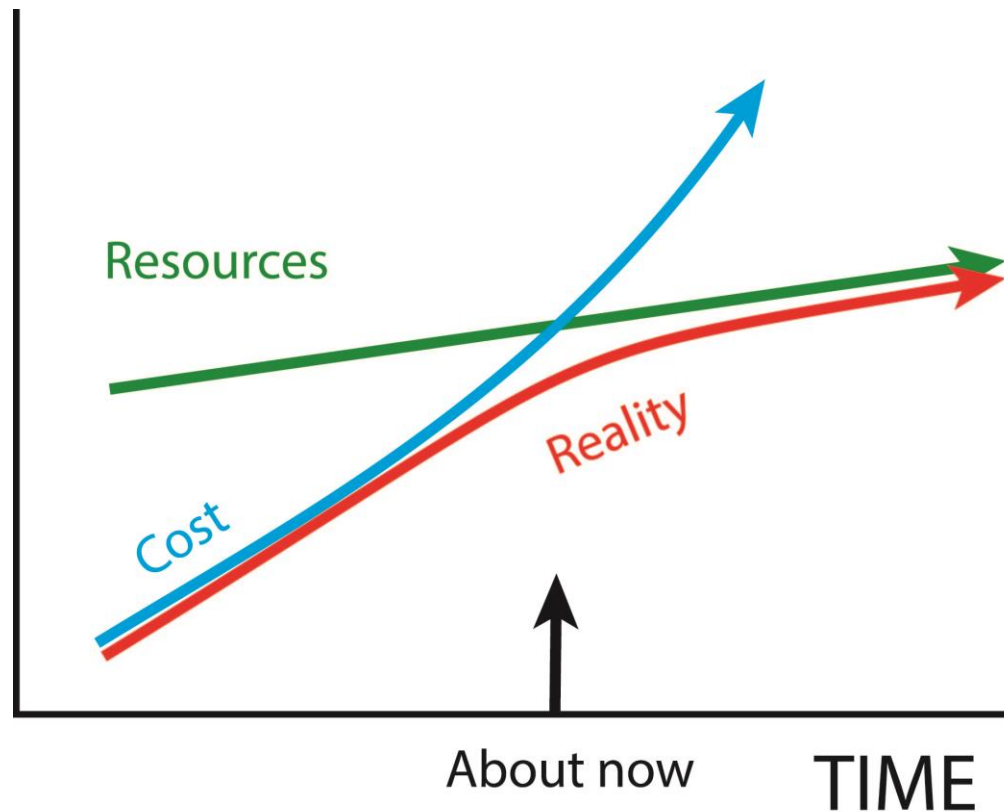
Expired Contest and Special Operations (1996+)

Last updated: Sunday, 16-Apr-2017 00:10:00 EDT
 [Currently Active Operations]
 [Spots provided courtesy of DX.Watch]

Start Date	End Date	DXCC Entity	Call	QSL via	Reported by	Info
2017						
March						
2017 Mar25	2017 Apr20	Barbados	8P6DR (spots)	LotW	425DXN 20170311	By G3RWL fm IOTA NA-021, 80-10m; CW RTTY, QSL also OK via G3RWL (Buro or direct) or Club Log
2017 Mar25	2017 Apr22	Rotuma	3D2AG/p (spots)	3D2AG	TDDX 20170306	By 3D2AG, 160-6m, incl 60m
2017 Mar29	2017 Apr17	Guam	AH2P (spots)	LotW	DXW.Net 20161003	By EA4AK, QRV on most needed bands and modes; auto-QSL via Buro, QSL also OK via Club Log, eQSL
April						
2017 Apr01	2017 Apr30	Nepal	9N1MD (spots)	I21BVZ	DXW.Net 20161229	By 9N1AA
2017 Apr06	2017 Apr17	Vanuatu	YJ0YM (spots)	VA7YM	DXW.Net 20170322	By VA7YM fm Port Vila, Efate I (IOTA OC-035), 80-6m; SSB RTTY PSK31; Hex beam, end-fed wire
2017 Apr06	2017 Apr18	Seychelles	S79Z (spots)	LotW	OK1NY 20170302	By OK1RI OK1NY OK1FFU OK1JKT OK1VVT OM5AW fm Mahe I (IOTA AF-024), 160-10m; CW SSB, QSL also OK via OM2FY
2017 Apr07	2017 Apr16	St Martin	FS (spots)	eQSL	DXNews 20170301	By W7NZJ as FS/W7NZJ fm OrientBeach (IOTA NA-105), 40-10m; CW + digital; 100w; Buddipole
2017 Apr09	2017 Apr16	Balearic Is	EA6 (spots)	F5SGI	TDDX 20170323	By F5SGI as EA6/F5SGI fm Minorca I, HF, CW, QSL OK via Buro or direct
2017 Apr09	2017 Apr24	Guadeloupe	FG (spots)	DM1DZ	TDDX 20170411	By DM1DZ as FG/DM1DZ fm St Francis; HF; SSB, perhaps PSK31; 100w; wire; QSL also OK via Club Log
2017 Apr11	2017 Apr18	Turks & Caicos	VP5 (spots)	Home Call	TDDX 20170221	By K3NK as VP5/K3NK and W3HNK as VP5/W3HNK fm Providenciales I (IOTA NA-002), 80-10m; CW SSB, perhaps digital; K3NK will upload log to LotW
2017 Apr12	2017 Apr18	Mauritania	5T3MM (spots)	PY4KL	DXNews 20170315	By 5T0JL; HF, QRV for CQ MM DX Contest
2017 Apr13	2017 Apr20	Palau	T8 (spots)	See Notes	TDDX 20170403	By J1M1RA as T88TA, JA7WFT as T88FT, JI6JHG as T88IH, JH7IPR as T88UW fm Koror, 160-6m; CW SSB RTTY JT65; each station's QSL info is on qrz.com
2017 Apr14	2017 Apr16	Panama	HP1IT (spots)	HP1RCP	HP1RIS 20170301	By HP1RIS HP1MAC fm Taboga I (IOTA NA-072), 40-10m; SSB CW, vertical, dipole, end-fed
2017 Apr14	2017 Apr21	Palau	T8 (spots)	Home Call	DXW.Net 20170128	By JH7IPR as T88UW, JI6JHG as T88IH, JA7WFT as T88FT, J1M1RA as T88TA; 160-6m; CW SSB JT65 JT9; T88UW QSL also OK via LotW
2017 Apr14	2017 Apr23	St Vincent	J88PI (spots)	GW4DVB Direct	TDDX 20170315	By GW4DVB fm Prune I, 40-10m; SSB; 100w; vertical, holiday style operation
2017 Apr15	2017 Apr22	Isle of Man	GT4BRS (spots)	DJ6OI	GW0ANA 20170221	By GW0ANA MW0DHF DJ8NK DL9GFB DL9RCF; special effort on 160m and 80m for WCNA; CW SSB JT65
2017 Apr16	2017 Apr28	Laos	XW4XR (spots)	LotW	TDDX 20170317	By 3W3B; 160-10m; CW RTTY JT65; QSL also OK via E21EIC
2017 Apr17	2017 Apr28	St Lucia	J6 (spots)	LotW	425DXN 20170408	By WF2S as J68SL and K1ZZI as J6K1ZZI fm Gros Islet (IOTA NA-108); QSL J68SL also via Club Log
2017 Apr17	2017 May08	Guatemala	TG7 (spots)	KC0W Direct	DXW.Net 20170415	By KC0W as TG7/KC0W, 40-6m; CW, 100w; work once per band; Non US include US\$2 w/ QSL request, US w/ SASE

hughes_9202_t.jpg Explorer_510_Side...jpg Explorer_510_BGA...jpg Yasawa island.jpg Show all X

But we're all aware that...
...there's a problem on the horizon



Cost of transportation has increased

Charge per person-day

1995 \$250

2015 \$500



The DX community has a limit...

The limit of DX resources

Radio Foundations	\$100k
Radio Clubs	\$20k
Radio Sponsors	\$100k
Grants	\$20k
Individuals	\$100k
QSLs	\$100k

TOTAL Radio Community \$440k

Potential outside of DX Community

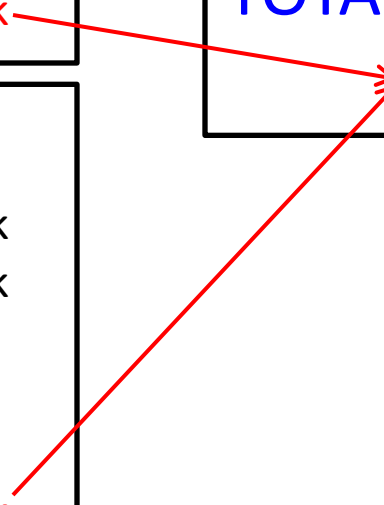
Non-Radio Sponsors	\$100k
Angels	\$100k
Non-Radio Grants	\$20k
Goal Sharing	\$50k

TOTAL Potential \$270k



TOTAL (potential)

\$710k



Options

- Fall back to 20th Century practice
- Continue unchanged
- Grow in size and budget
- Evolve technology
- Change program goals
- Separate into subActivities
- Lose interest in DX
- Introduce a new paradigm

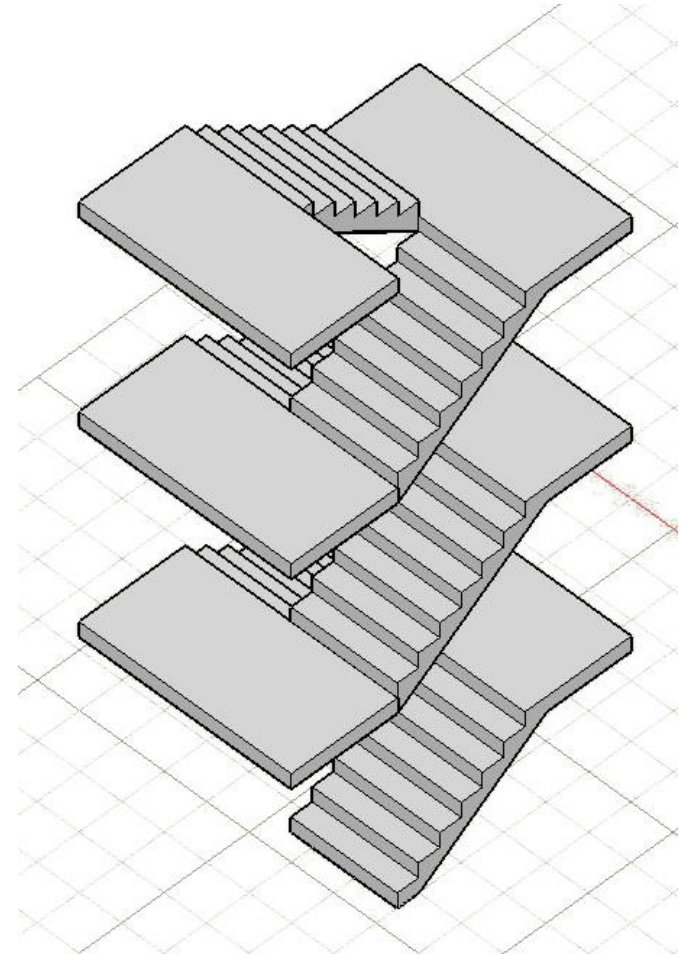
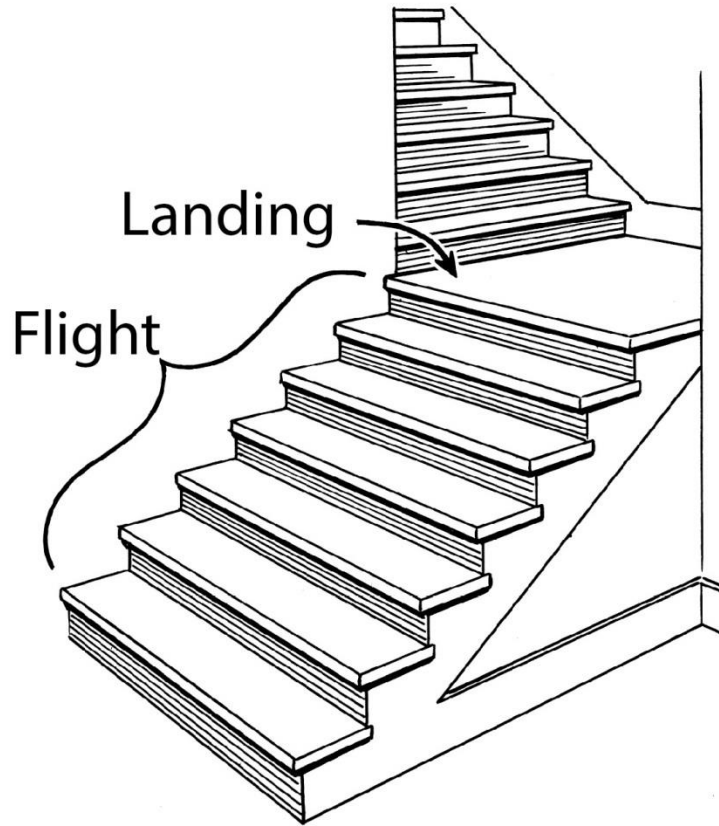
My view of the evolution of DX

DX is Still a Thing!

- Phase 0 DX IS!
- Phase 1 Internet
- Phase 2 Real-time
- Phase 3 Social Media
- Phase 4 Systems
- Phase 5 SET

Your Part in DX of the Future

DX has evolved like flights of stairs



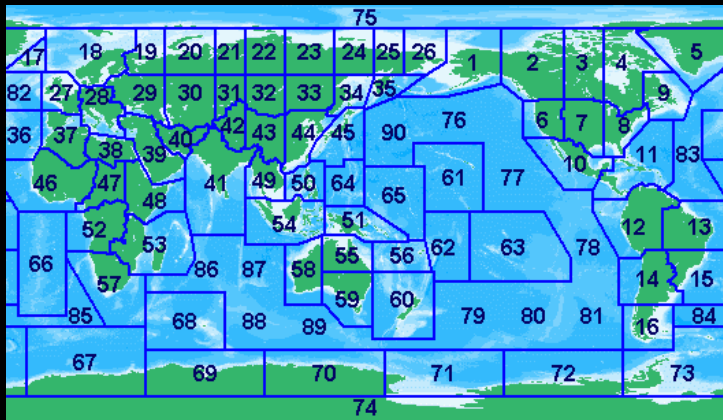
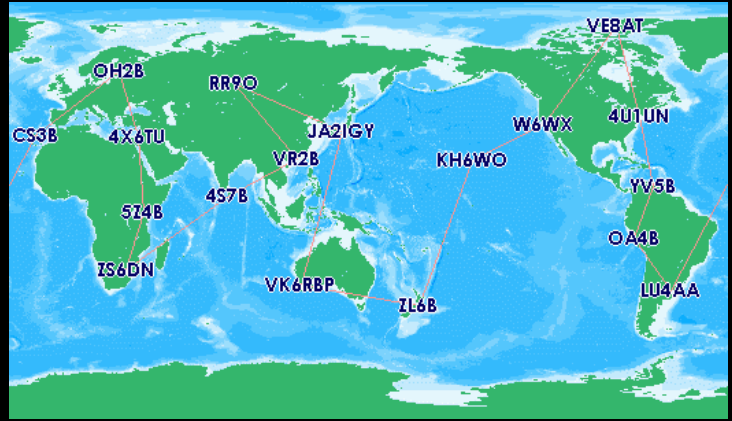
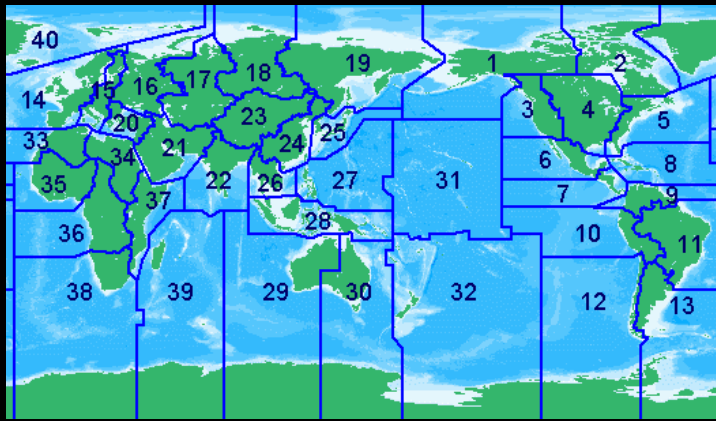
Each flight is followed by a landing, then another flight

PHASE 0 1915-1995

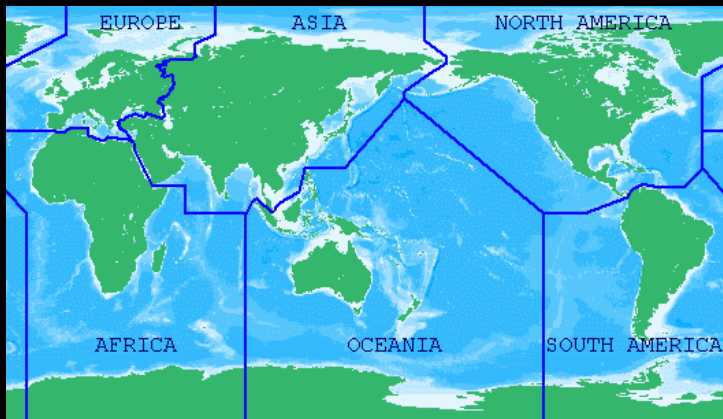
DX IS!

0

Dxing and DXpeditioning have matured



AR	BR	CR	DR	ER	FR	GR	HR	IR	JR	KR	LR	MR	NR	OR	PR	QR	RR
AQ	BQ	CQ	DQ	EQ	FQ	GQ	HQ	IQ	JQ	KQ	LQ	MQ	NQ	OQ	PQ	QQ	RQ
AP	BP	CP	DP	EP	FP	GP	HP	IP	JP	KP	LP	MP	NP	OP	PP	QP	RP
AO	BO	CO	DO	EO	FO	GO	HO	IO	JO	KO	LO	MO	NO	OO	PO	QO	RO
AN	BN	CN	DN	EN	FN	GN	HN	IN	JN	KN	LN	MN	NN	ON	PN	QN	RN
AM	BM	CM	DM	EM	FM	GM	HM	IM	JM	KM	LM	MM	NM	OM	PM	QM	RM
AL	BL	CL	DL	EL	FL	GL	HL	IL	JL	KL	LL	ML	NL	OL	PL	QL	RL
AK	BK	CK	DK	EK	FK	GK	HK	IK	JK	KK	LK	MK	NK	OK	PK	QK	RK
AJ	BJ	CJ	DJ	EJ	FJ	GJ	HJ	IJ	JJ	KJ	LJ	MJ	NJ	OJ	PJ	QJ	RJ
AI	BI	CI	DI	EI	FI	GI	HI	II	JI	KI	LI	MI	NI	OI	PI	QI	RI
AH	BH	CH	DH	EH	FH	GH	HH	IH	JH	KH	LH	MH	NH	OH	PH	QH	RH
AG	BG	CG	DG	EG	FG	GG	HG	IG	JG	KG	LG	MG	NG	OG	PG	QG	RG
AF	BF	CF	DF	EF	FF	GF	HF	IF	JF	KF	LF	MF	NF	OF	PF	QF	RF
AE	BE	CE	DE	EE	FE	GE	HE	IE	JE	KE	LE	ME	NE	OE	PE	QE	RE
AD	BD	CD	DD	ED	FD	GD	HD	ID	JD	KD	LD	MD	ND	OD	PD	QD	RD
AC	BC	CC	DC	EC	FC	GC	HC	IC	JC	KC	LC	MC	NC	OC	PC	QC	RC
AB	BB	CB	DB	EB	FB	GB	HB	IB	JB	KB	LB	MB	NB	OB	PB	QB	RB
AA	BA	CA	DA	EA	FA	GA	HA	IA	JA	KA	LA	MA	NA	OA	PA	QA	RA

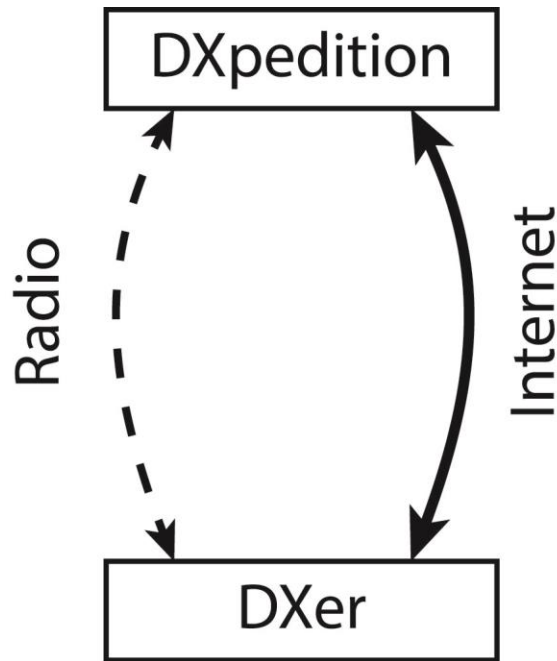


PHASE 1 1995-2005

INTERNET

1

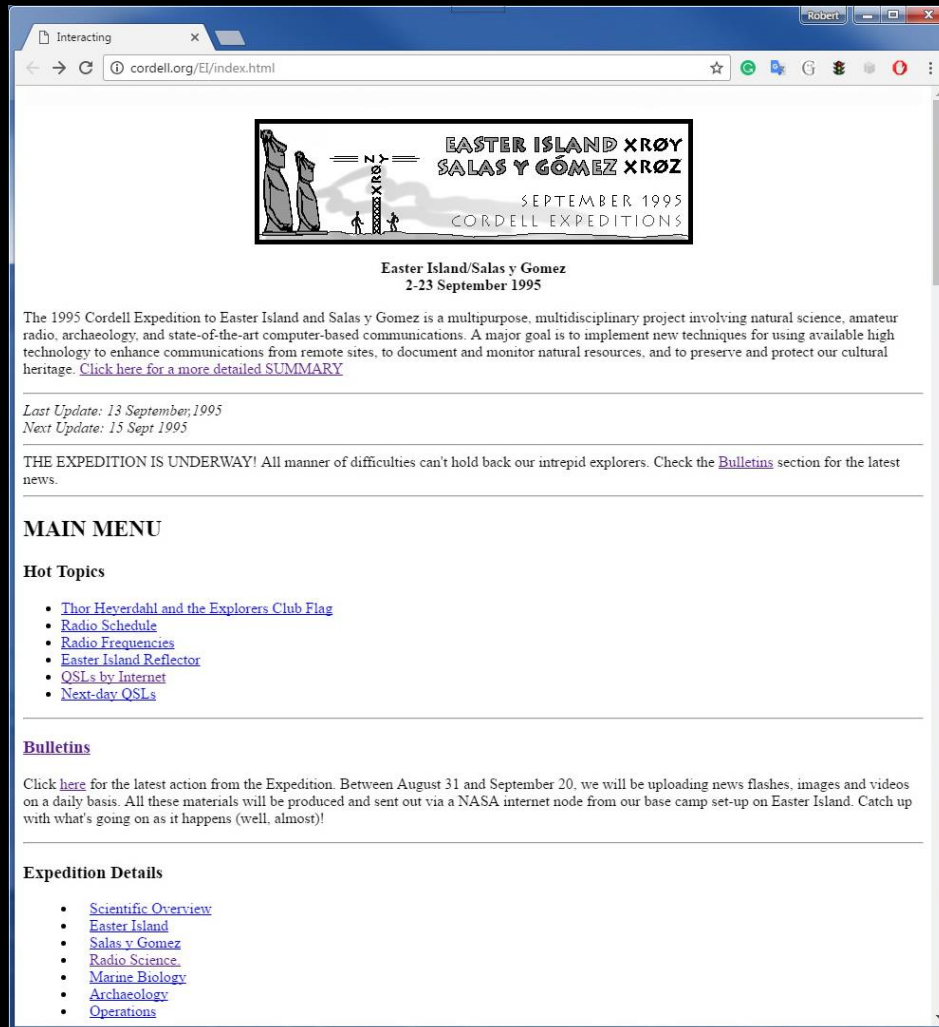
Introduction of the Internet



Applications


- ✓ Online log server
- ✓ Online logs
- ✓ News
- ✓ Automatic emails
- ✓ Pre-emptive QSLs
- ✓ Next-day QSLs

The First DXpedition Website



The screenshot shows a web browser window with the address bar displaying "cordell.org/EI/index.html". The page features a header banner with the text "EASTER ISLAND XRØY SALAS Y GÓMEZ XRØZ" and "SEPTEMBER 1995 CORDELL EXPEDITIONS". Below the banner, the text reads "Easter Island/Salas y Gomez 2-23 September 1995". The main content area includes a paragraph describing the expedition's purpose, a "Last Update" and "Next Update" section, a "THE EXPEDITION IS UNDERWAY!" announcement, a "MAIN MENU" section, a "Hot Topics" list, a "Bulletins" section, and an "Expedition Details" list.

Interacting x
cordell.org/EI/index.html



Easter Island/Salas y Gomez
2-23 September 1995

The 1995 Cordell Expedition to Easter Island and Salas y Gomez is a multipurpose, multidisciplinary project involving natural science, amateur radio, archaeology, and state-of-the-art computer-based communications. A major goal is to implement new techniques for using available high technology to enhance communications from remote sites, to document and monitor natural resources, and to preserve and protect our cultural heritage. [Click here for a more detailed SUMMARY](#)

Last Update: 13 September, 1995
Next Update: 15 Sept 1995

THE EXPEDITION IS UNDERWAY! All manner of difficulties can't hold back our intrepid explorers. Check the [Bulletins](#) section for the latest news.

MAIN MENU

Hot Topics

- [Thor Heyerdahl and the Explorers Club Flag](#)
- [Radio Schedule](#)
- [Radio Frequencies](#)
- [Easter Island Reflector](#)
- [QSLs by Internet](#)
- [Next-day QSLs](#)


Bulletins

Click [here](#) for the latest action from the Expedition. Between August 31 and September 20, we will be uploading news flashes, images and videos on a daily basis. All these materials will be produced and sent out via a NASA internet node from our base camp set-up on Easter Island. Catch up with what's going on as it happens (well, almost)!

Expedition Details

- [Scientific Overview](#)
- [Easter Island](#)
- [Salas y Gomez](#)
- [Radio Science](#)
- [Marine Biology](#)
- [Archaeology](#)
- [Operations](#)

The Online Log Server



QSO SEARCH

Please enter...

K6MM

...a valid callsign

First QSO in the log: 26 Mar 2013 19:24 UTC
Last QSO in the log: 11 Apr 2016 00:27 UTC

Enter a callsign:

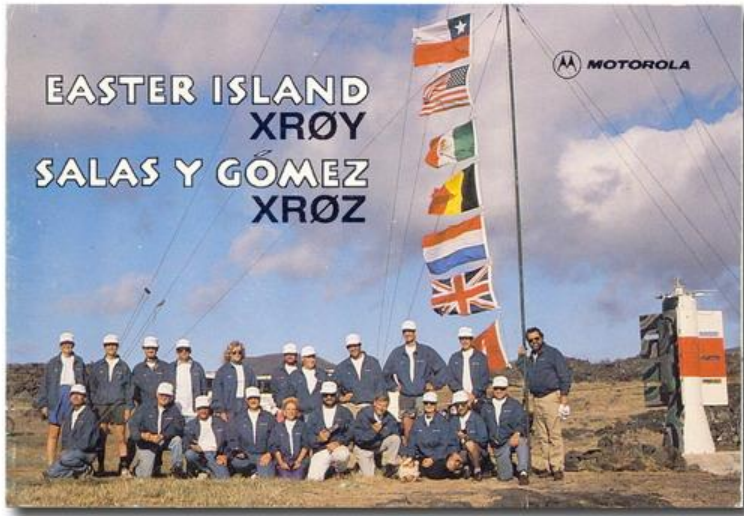
Log Search result for K6MM

MODE/BAND	160 m	80 m	40 m	30 m	20 m	17 m	15 m	12 m	10 m	2 m
CW	✓	✓	✓	✓	✓					
FM										✓
RTTY			✓							
SSB						✓				

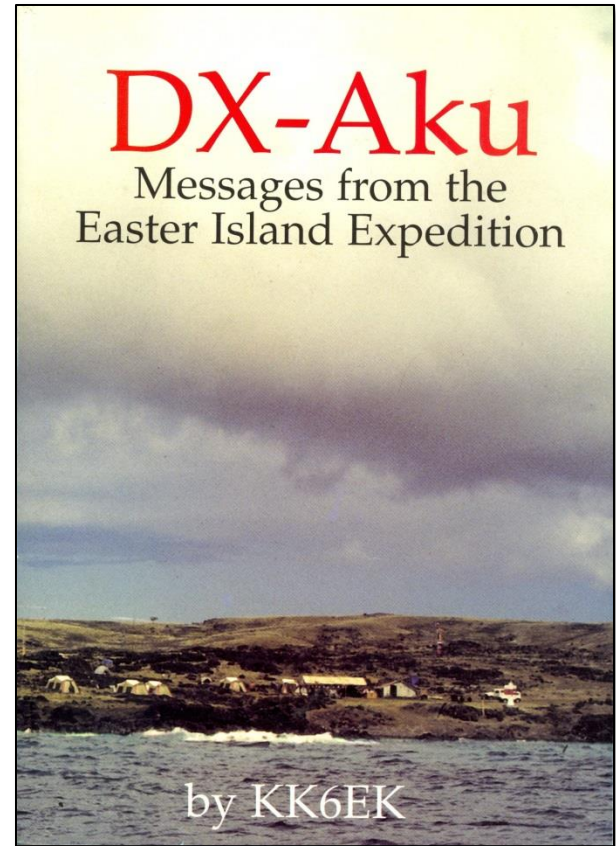
Total of 7 QSOs with K6MM

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v4.2

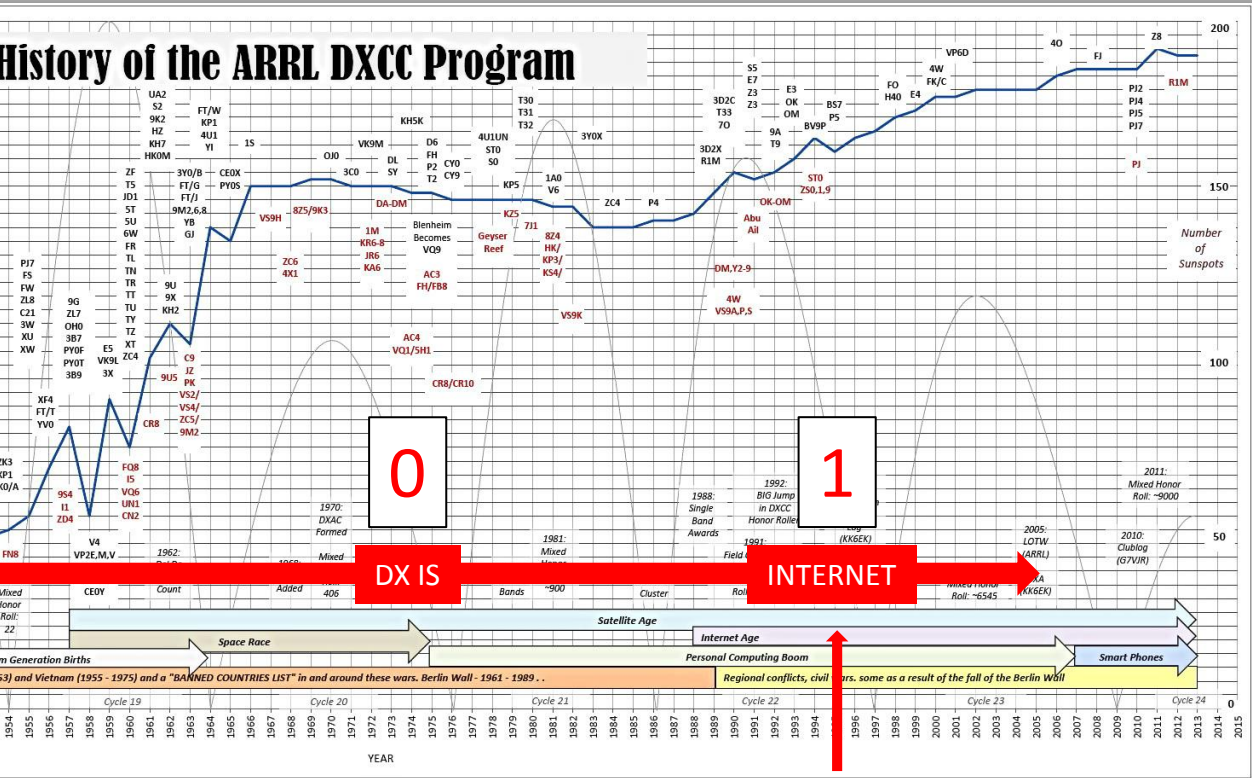
First use of the Internet on a DXpedition



Easter Island
1995



The Phases of DX



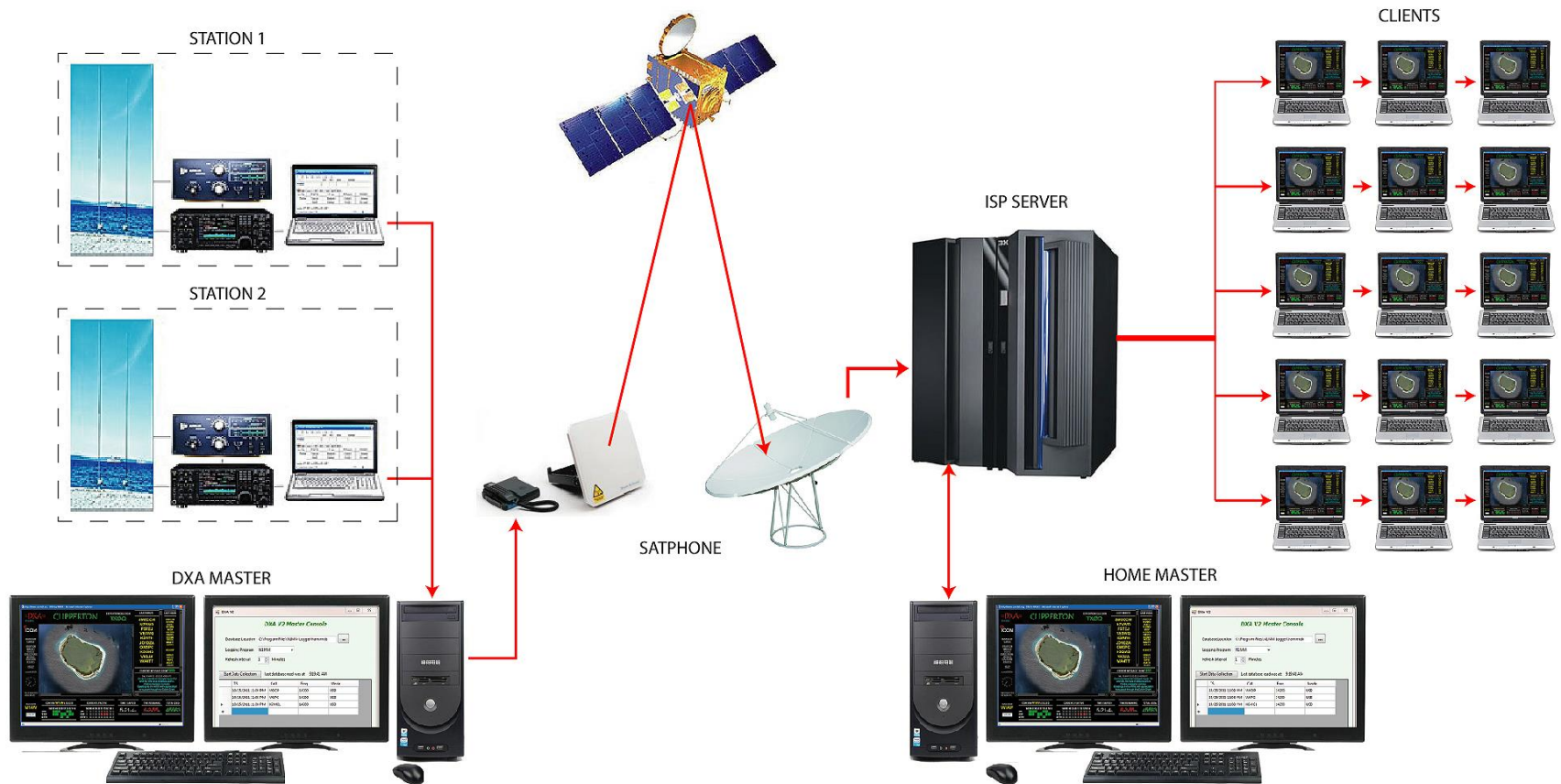
XRØY
1995

PHASE 2 2005-2015

REAL-TIME

2

Real-time and graphics added to the Log Server



DXpedition

DXA

Satellite



Internet

DXers

DXA – The Real-time Graphic Log Interface

DXA3
dx2.org/dxa3dev/

=DXA=
Version 3

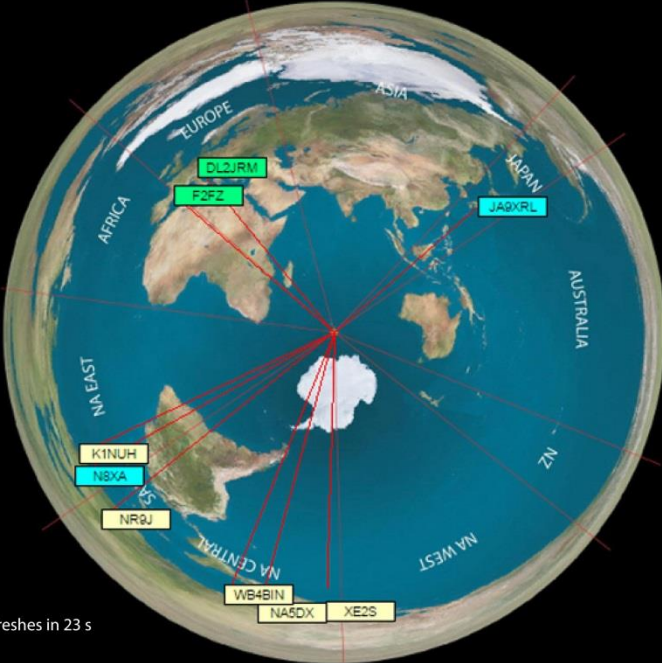



Pause
Select map
Toggle data

Order QSLs
E-mail VKØEK

HELP
Quick tips
About
Privacy

VKØEK Heard Island 2016



Refreshes in 23 s

Just Logged

- DL2JRM
- JA9XR
- NØXA
- F2FZ
- NA5DX
- K1NUH
- XE2S
- WB4BIN
- NR9J

Worked

- 1339 UTC
- F4ENK
- KB0MHH
- JA9RA
- W9JA
- DK6IM
- 1339 UTC
- JA1QOA
- JA3KVT
- AD1C
- JA1CLZ
- NX0X
- JH9KVF
- JG1ULJ
- W4DKS
- JA5NNS
- 1339 UTC
- N6AKI
- DF8AN
- DK2OY
- W5EK

Message from VKØEK

April 3, 2016. The radio operation at Spit Bay has been cancelled due to the violent surf and access restrictions set by the permit. In fact, the operation has been found to be unnecessary, based on the distribution of QSOs in the log. A small scientific team has been dispatched to explore and document Stephenson Lagoon.

QSO SEARCH

Please enter...

...a valid call sign

CONFIRM LOGGED

160	80	40	30	20	17	15	12	10	6
CW	■	■	■	■	■	■	■	■	■
SSB	■	■	■	■	■	■	■	■	■
DIGI	■	■	■	■	■	■	■	■	■

CURRENTLY WORKING

160	80	40	30	20	17	15	12	10	6
CW	●	●	●	●	●	●	●	●	●
SSB	●	●	●	●	●	●	●	●	●
DIGI	●	●	●	●	●	●	●	●	●

TIME REMAINING

1d16h19m

Fri, 10 Apr 2016
13:40:33 UTC

TOTAL QSOs

56856

CW SSB DIGI
56024 | 7685 | 147

What Real-time Brings to the DXpedition

Advantages

- ✓ Immediate check of QSO in the log
- ✓ Reduced dups
- ✓ Elimination of pirates
- ✓ Operating aid (watching active band-modes, etc.)
- ✓ Pleasure in feeling part of the operation

Potential advantages

- ✓ Coupling to other applications
- ✓ Statistical displays
- ✓ Quality monitoring of the DX station
- ✓ DQRM reduction

Cost to Enable Real-time (DXA)

Rates

Terminal rental	\$10/day
Air time	\$7/MB

DXpedition

Rental 50 days	\$500
Data upload	5 MB

Total cost	\$535
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[0.1% of Mega-DXpedition budget]

First Use of Real-time Internet

Kure Atoll
K7C 2005

The online log server:

DXA 



KURE ATOLL EXPEDITION
Pacific Ocean K7C Sep-Oct 2005

CORDELL EXPEDITIONS

CORDELL EXPEDITIONS is pleased to announce the...
KURE ATOLL
THE 2005 CORDELL EXPEDITION

Northwest Hawaiian Islands, Pacific Ocean
Sep-Oct. 2005

OVERVIEW ORGANIZATION PERSONNEL SCHEDULE CORPORATE SPONSORS SUPPORT US DXA PAGE QSL ROUTE CONTACT US

Knelling: AD6E, ND4X, WA1S, DJ9ZB, N6TY. Standing: H69RZ, N70GG, W6KK, N6HC, DJ5IW, VE7CT, K6BEK

UPDATE 6 Oct 2005: The K7C expedition has been completed successfully! Here is a [Preliminary Summary](#) of the operations and results.

A multi-disciplinary expedition to Kure Atoll, the northernmost Hawaiian atoll, will be carried out during Sept-Oct. 2005. The expedition team is an international group of highly experienced radio amateurs and field scientists. They will activate Kure for radio amateurs worldwide, using the callsign **K7C**, and also implement an innovative satellite-internet system ("DXA") for real-time display of the expedition activities. In addition to the radio operations, the team will carry out a variety of other activities in support of the wildlife sanctuary on Kure, and contribute to the maintenance and upgrading of the facilities on Kure.



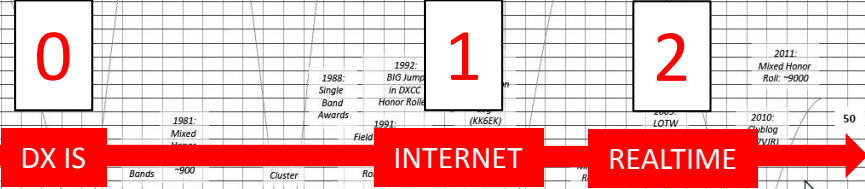
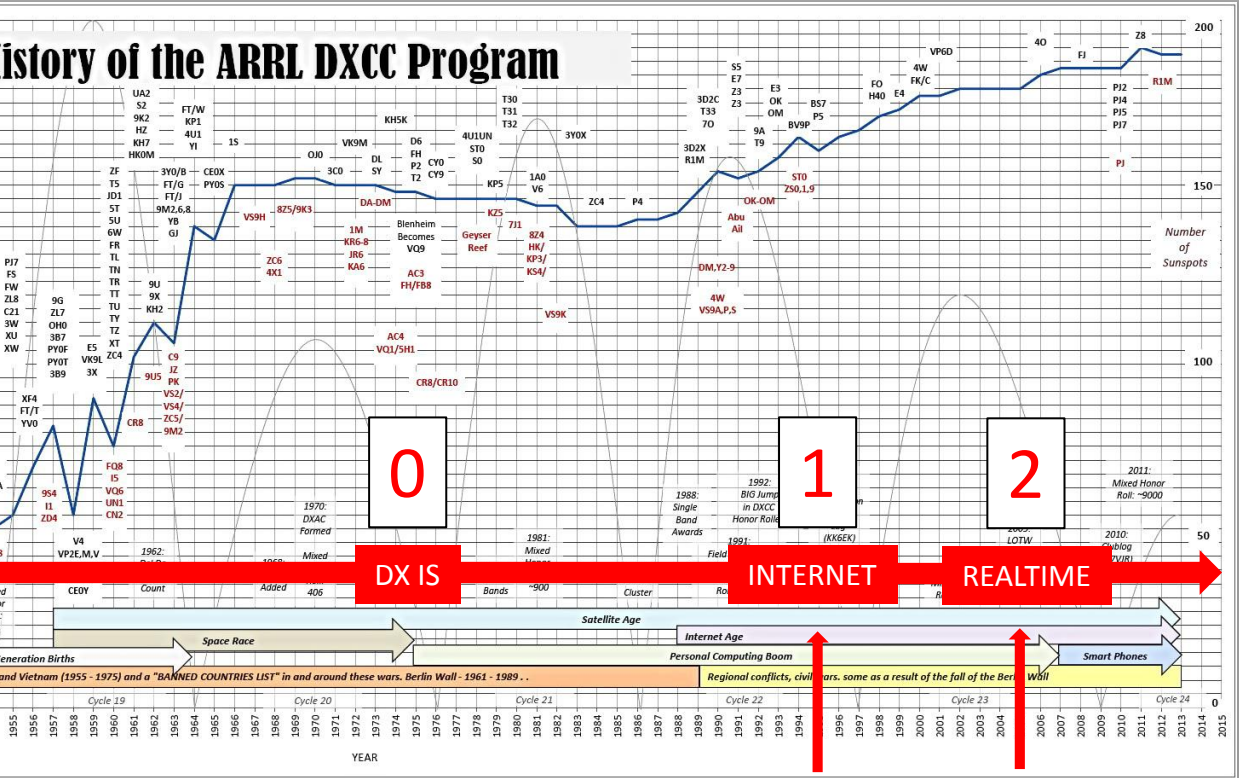
DXA KURE ATOLL EXPEDITION CALL SIGN K7C

4X4DK
SM0CCM
NTVWD
F8TEJ
VE3WQ
N2DP
JO1DZA
OM3PC
K5OMS
VK3JA
WA4TT
K2RTH

5.2.52
6:21.7
21601

Watch it in real time with DXA!

The Phases of DX



XRØY
1995

K7C
2005

PHASE 3 2015-2025

SOCIAL MEDIA

3

Functions Enabled Through Social Media



- ✓ DX websites
- ✓ Email
- ✓ Newsletters
- ✓ Magazine articles
- ✓ Blogs
- ✓ Help Desk
- ✓ AudioLog
- ✓ Dropbox
- ✓ Skype
- ✓ YouTube

...and many more

Example: Websites and Blogs

Heard Island
VKØEK 2016

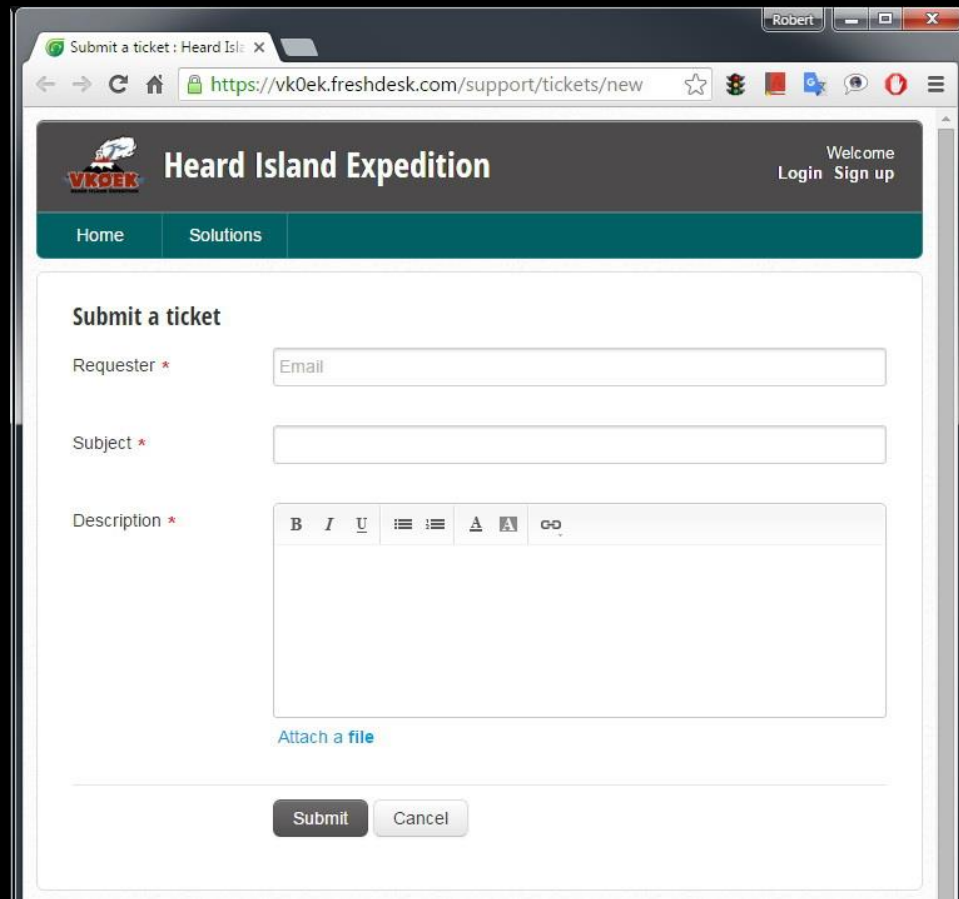
<https://vk0ek.org/>



The screenshot shows a web browser displaying the website for the Heard Island expedition. The page features a dark header with the VKØEK logo, a QRT logo, and the text "VKØEK=Dx10²³ THE HEARD ISLAND EXPEDITION". A navigation menu includes links for NEWS, HOW TO WORK US, PROPAGATION, LOG, QSL, PLAN, TEAM, SPONSORS, SOUVENIRS, CONTACT US, TRACK US, LISTEN TO US, DXA, ARGO BOUYS, DRIFTING BUOYS, WSPR BEACON, WEATHER, and PHOTOS. The main content area displays a "Status Update [26-MAR-2016 1400z]" dated MARCH 26, 2016 / KY6R / 4 COMMENTS. Below the text is a photograph of several people working at computers inside a tent. A "Follow" button is visible in the bottom right corner of the image area.

Example: Help Desk

Heard Island
VKØEK 2016



The screenshot shows a web browser window with the URL <https://vk0ek.freshdesk.com/support/tickets/new>. The page title is "Submit a ticket : Heard Isl: X". The header features the "VKØEK Heard Island Expedition" logo and navigation links for "Home" and "Solutions". A user profile for "Robert" is visible in the top right corner, along with "Welcome", "Login", and "Sign up" options. The main content area is titled "Submit a ticket" and contains a form with the following fields:

- Requester ***: A text input field with the placeholder "Email".
- Subject ***: A text input field.
- Description ***: A rich text editor with a toolbar containing icons for bold (B), italic (I), underline (U), bulleted list, numbered list, text color, background color, and link (GO).

Below the description field is a link that says "Attach a file". At the bottom of the form are two buttons: "Submit" and "Cancel".

Facebook

The screenshot shows the Facebook page for 'Heard Island 2016 Expedition' (@heardisland2015). The page features a large header image of a snow-capped mountain. Below the header, there is a post from October 11 at 8:24pm. The post text reads: 'Hearty congrats to Bob, KK6EK and the entire VK0EK team for a prestigious prize of winning the October 2016 QST Cover Plaque Award. http://vk0ek.org/.../kk6ek-wins-october-2016-qst-cover-plaque...'. The post has 950 likes. Below the post, there is a 'News' section with a headline 'KK6EK Wins October 2016 QST Cover Plaque Award!' and a sub-headline 'Hearty congrats to Bob, KK6EK and the entire VK0EK team for a prestigious prize of winning the October 2016 QST Cover Plaque Award.' The post is shared by Frederick A. Belton, Wesley Beck, Tony Ipr and 9 others. There is also a 'PHOTOS' section with a grid of images. The left sidebar shows navigation options like Home, About, Photos, Likes, and Posts, along with a 'Create a Page' button.

Twitter

The screenshot shows the Twitter profile for 'Heard Island DX Team' (@VK0EK). The profile picture is a penguin. The bio reads: 'VK0EK Mar. / Apr 2016 Heard Island Dxpedition #vk0ek #heardisland #DX'. The location is 'Heard Island' and the website is 'heardisland.org'. The page was joined in April 2014. The statistics show 1,199 tweets, 932 following, 2,212 followers, and 227 likes. There is a 'New to Twitter?' sign-up button. Below the profile, there is a tweet from 'Heard Island DX Team @VK0EK - Oct 11' that reads: 'KK6EK Wins October 2016 QST Cover Plaque Award! vk0ek.org/2016/10/12/kk6...'. The tweet includes a small image of a penguin. The right sidebar features an ARRL (American Radio Relay League) advertisement with a 'News' section containing the headline 'KK6EK Wins October QST Cover Plaque Award' and a sub-headline 'Heard Island DX Team by Robert W. Schroeder, VK0EK'. The advertisement also includes a 'Photo Gallery' and a 'Sign up' button.

Example: Newsletter

EXPEDITION PARTNERS WITH HDT GLOBAL

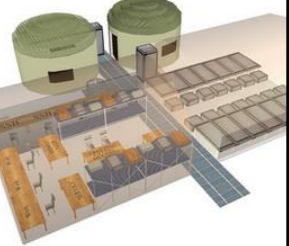
We are very pleased to announce that we have partnered with HDT Global as a major sponsor. The agreement was struck in a meeting on May 22, 2015, at the company office in Solon, Ohio. The company also offers robotic systems for commercial, healthcare, underwater, and military applications. Its products are used to meet the specific needs of command posts, hospitals, military barracks, emergency medical treatment units, CBRN decontamination facilities for first responders, and command and control.



The shelter shown above is the 20' R x 21' H AirBeam shelter. It is made of two main sections joined together with an air core. The walls and ceiling are insulated, and there are various electrical connections and ventilation.

HDT Global, Inc. designs and manufactures shelters, generators, air filtration devices, robotics, and other engineered solutions. It offers military tent shelter systems, command control units, expeditionary energy products, environmental control units, Nordic industrial products, military power systems, flight line equipment, specialty vehicles, and accessories.

RELIMINARY CAMPSITE DESIGN USING AIRBEAM



Heard Island Expedition Newsletter Vol. 1 No. 1 June 1, 2015

GOAL FOR RADIO OPERATION: 100,000+ CONTACTS

"Thank you QEZ."
 "WAW"
 "WAW, Five and nine"
 "Alo five and nine."
 "Thank you QEZ."



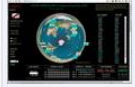
So it goes, hour after hour, day after day. Hundreds, thousands of times. Ten thousand, fifty thousand. Passing One-hundred thousand. This is the routine for logging calls from amateur radio stations worldwide, seeking the goal of confirming a contact with perhaps 100,000 different stations. For most, this is their very first contact with Heard Island. And it might be the last. The island is so rarely

visited that the two people who live there are the only ones who can contact the island.

"The goal is to maximize the number of contacts with Heard Island for the expedition. There will be tens of thousands of contacts."

DXA REAL TIME

Radio operators seeking a confirmed contact with VKOEK will have a powerful tool available to them. DXA is a single web page that displays the current activity of the Expedition, automatically updating every minute. By watching this page, the DXer will get confirmation of his contact within 60 seconds, giving him a chance to correct errors if necessary. See a live simulation of DXA at www.heardisland.org/dxa/



RESEARCHER SEEKS YELLOW

Dr. Robert Anderson is seeking specimens of the algal class Xanthophyceae, which has a number of genes that commonly occur in soils, especially cold soils like Antarctica and the Alps Mountains. He Anderson writes: "I was able to demonstrate critical molecular markers for diatoms, cyanobacteria, diatoms, Euglenozoa, phycocyanin, and other organisms that are found growing on or in soils. The process involves isolating the DNA from the specimens and then sequencing it. I would ask my collaborators to collect and carry out the molecular studies. Many that are green algae grow in soils, and in addition to the molecular studies, many that are cyanobacteria, diatoms, Euglenozoa, phycocyanin, and other organisms that are found growing on or in soils."



EXPEDITION SCHEDULED FOR MAR- APR 2016



Newsletter Vol. 1 No. 1 June 1, 2015

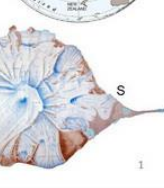
INSIDE THIS ISSUE

- Radio operations.....2
- DXA Real Time.....2
- Yellow-green algae.....2
- Partnership with HDT Global.....3
- Campsite layout.....3
- I HELPED MAKE IT HAPPEN.....4

Wednesday, 23 May 2015. Today Cordell Expeditions signed a contract with Nigel Jubly, owner and operator of the Revolutant (above), for the expedition to Heard Island, and moved the project schedule to March-April, 2016. The ship will depart March 8 from Cape Town, South Africa, proceed directly to Heard Island, and finally to Fremantle, Australia on April 22. The stay at Heard Island will be normally March 10-April 10.



The nominal 30-day stay at Heard Island will enable amateur radio operations, using the call sign VKOEK. While the radio operation is the primary goal, the team will also carry out a limited scientific program, including a search for new species that can enhance our understanding of biodiversity and the effects of climate change. This will be the first private visit to the island since 1997 and the first scientific project there since the Australian



Heard Island is about 20 km long and 10 km wide. The map shows the location of the expedition site at the north end of the island. The map also shows the location of the joint named A and S.

For further information, please contact the Expedition Leader, Dr. Robert Schmeider, schmeider@cordell.org.

Heard Island Expedition Newsletter Vol. 1 No. 1 June 1, 2015

"I HELPED MAKE IT HAPPEN..."

From the Team:
 "Our goal is not just to put on a great performance, but also to include you in the adventure of the expedition. We want you to feel that you were a member of the team, whether you traveled to Heard Island or not. We want you to get a taste of the excitement, adventure, and deep satisfaction from the accomplishment."



The Heard Island Project is centered around an expedition to Heard Island, lying at 53°S 175°E in the Southern Ocean. The island is extremely isolated, and very seldom visited. The project will include an ambitious amateur radio operation using the call sign VKOEK, and a variety of scientific investigations under the title "Discovering Life in the Extremes". The expedition team of 14, will sail on or around March 8, 2016, from Cape Town, South Africa, spend up to 21 days on Heard Island, and end the voyage at Fremantle, Western Australia.

"Here are a few things you can do to be part of the project: [Subscribe to this newsletter](http://www.heardisland.org/NEWSLETTER/) (newsletter@heardisland.org / NEWSLETTER). This newsletter will contain inside information not generally available. From the main page you can make a donation by clicking on the 'DONATE' link. If you are a member of a group, consider recommending that the group make a contribution. You could also donate or lend equipment, spare tools, shipping cases, etc. or you could obtain services at reduced cost. If you are a programmer, we could use your help in developing our website. "Contributions are tax-deductible according to the code governing 501(c)(3) nonprofit organizations."

This newsletter will contain special information not generally available to the public. We will welcome your comments and contributions. Please contact Dave at dave@heardisland.org

Project Management
 Cordell Expeditions
 2125 Walnut Blvd.
 Walnut Creek, CA 94596 USA
 (925) 924-2735 (voice and fax)
info@heardisland.org
<http://www.heardisland.org>
<http://www.vkoeek.org>

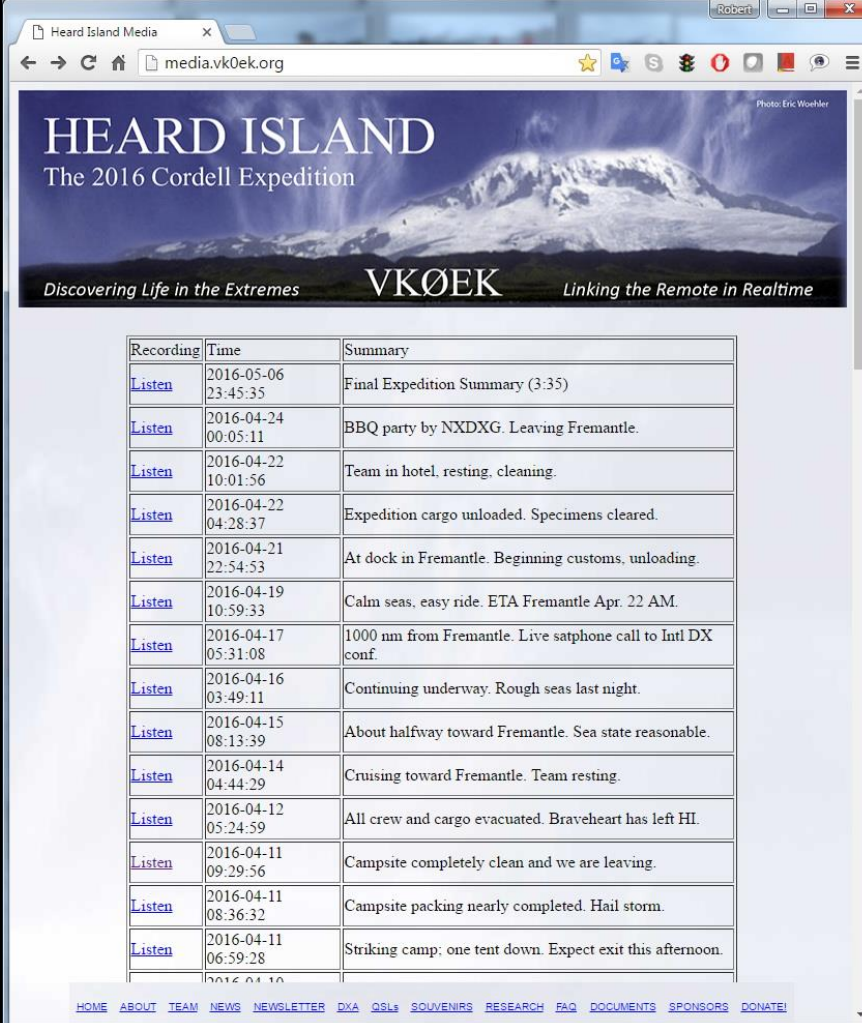
Organizer/Expedition Leader
 Dr. Robert Schmeider
schmeider@cordell.org

Co-organizer
 Rob Hollock VK2R
 Double Dimes
robholck@gmail.com

Radio Team Leader
 Dave Lloyd KJLL
KJLL@earthlink.net

Heard Island Expedition Newsletter Vol. 1 No. 1 June 1, 2015

Example: AudioLog



The screenshot shows a web browser window with the URL media.vk0ek.org. The page features a header with a photograph of a snowy mountain peak. The text in the header reads "HEARD ISLAND The 2016 Cordell Expedition" and "VKØEK Linking the Remote in Realtime". Below the header is a table with three columns: "Recording", "Time", and "Summary". Each row in the table includes a blue "Listen" link. At the bottom of the page, there is a navigation menu with links for HOME, ABOUT TEAM, NEWS, NEWSLETTER, DXA, QSLs, SOUVENIRS, RESEARCH, FAQ, DOCUMENTS, SPONSORS, and DONATE!

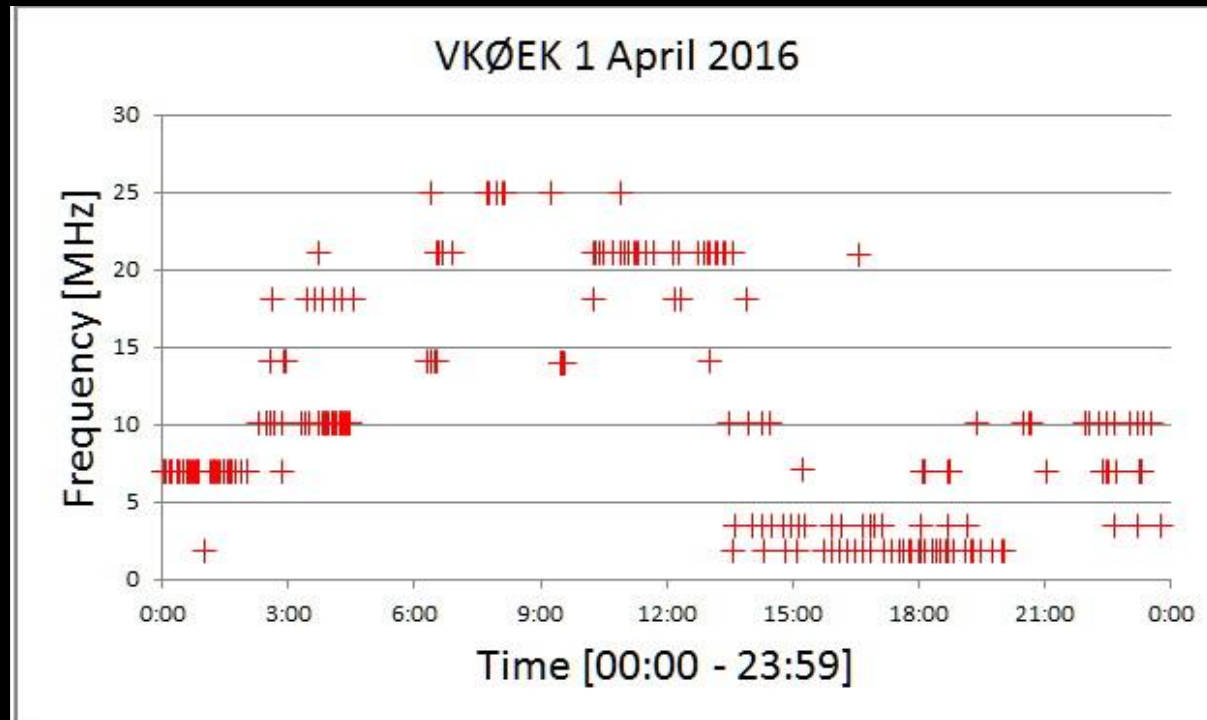
Recording	Time	Summary
Listen	2016-05-06 23:45:35	Final Expedition Summary (3:35)
Listen	2016-04-24 00:05:11	BBQ party by NXDXG. Leaving Fremantle.
Listen	2016-04-22 10:01:56	Team in hotel, resting, cleaning.
Listen	2016-04-22 04:28:37	Expedition cargo unloaded. Specimens cleared.
Listen	2016-04-21 22:54:53	At dock in Fremantle. Beginning customs, unloading.
Listen	2016-04-19 10:59:33	Calm seas, easy ride. ETA Fremantle Apr. 22 AM.
Listen	2016-04-17 05:31:08	1000 nm from Fremantle. Live satphone call to Intl DX conf.
Listen	2016-04-16 03:49:11	Continuing underway. Rough seas last night.
Listen	2016-04-15 08:13:39	About halfway toward Fremantle. Sea state reasonable.
Listen	2016-04-14 04:44:29	Cruising toward Fremantle. Team resting.
Listen	2016-04-12 05:24:59	All crew and cargo evacuated. Braveheart has left HI.
Listen	2016-04-11 09:29:56	Campsite completely clean and we are leaving.
Listen	2016-04-11 08:36:32	Campsite packing nearly completed. Hail storm.
Listen	2016-04-11 06:59:28	Striking camp; one tent down. Expect exit this afternoon.

Example: Weak Signal Propagation Net (WSPR Net)



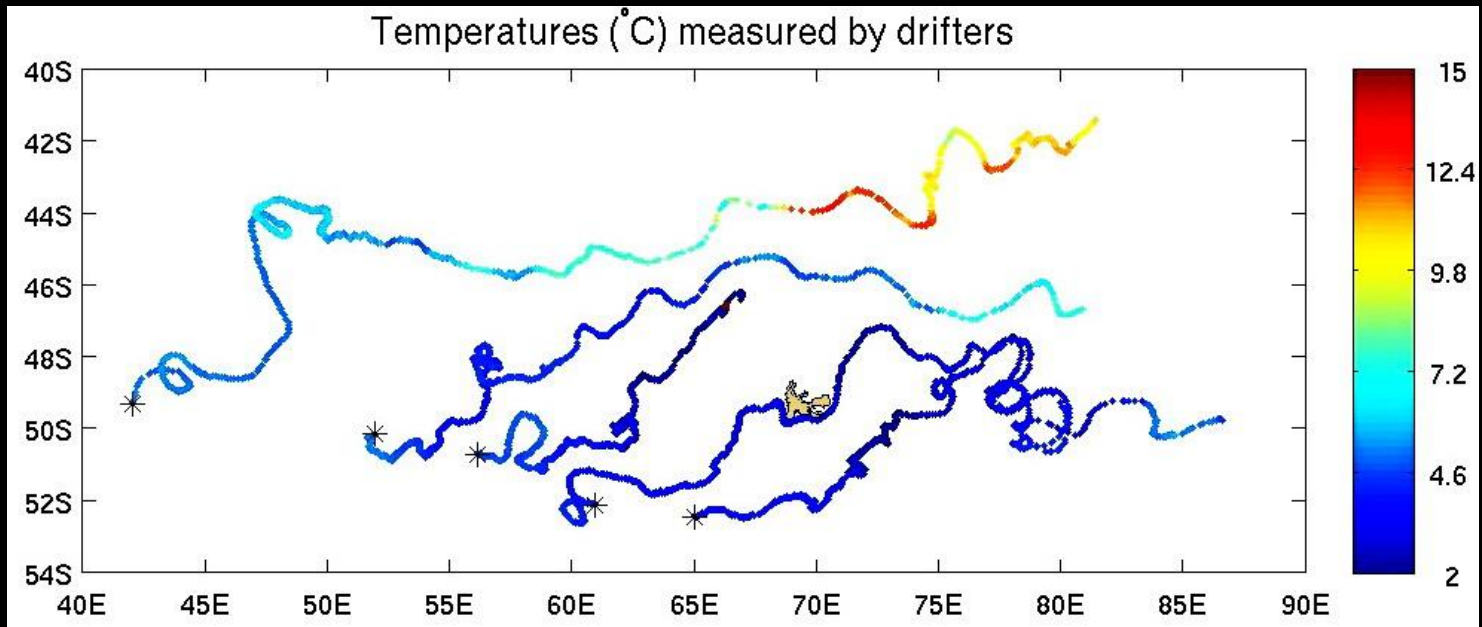
A group of amateur radio operators using very low power (QRP/QRPp) transmissions to measure radio propagation.

Example: Reverse Beacon Network (RBN)



A network of stations listening to the bands and reporting the stations they hear.

Example: Oceanic Drifters and Diving Buoys

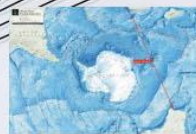


A set of drifting and diving instruments provided by NOAA and WHOI that record and telemeter multiple oceanic parameters during many months of drifting after deployment. There are thousands of such instruments worldwide.

Internet Connections for VKØEK



The TEAM



Here are some ways to connect with VKØEK

MAIN WEBSITES

- EXpedition site <http://www.heardisland.org>
- DXpedition site <http://www.vk0ek.org>
- DXA <http://www.dxa3.org>

SERVICES

- Contact us <https://vk0ek.freshdesk.com/support/tickets/new>
- QSLs <https://shop.vk0ek.org>
- EXpedition souvenirs <http://shop.vk0ek.org/souvenirs.html>
- DXpedition souvenirs <http://astridsembroidery.com/vk0ek.html>
- AudioLog <https://media.vk0ek.org>
- Donate http://www.heardisland.org/HD_pages/HD_donations.html
- Uploaded media http://www.heardisland.org/HD_pages/HD_uploads.html

INFORMATION

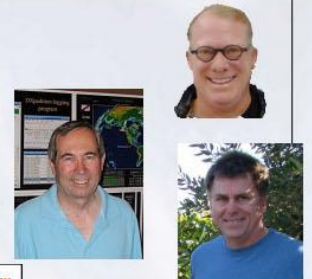
- DXA About http://www.heardisland.org/HD_pages/HD_DXA.html
- DXA Privacy http://www.heardisland.org/HD_pages/HD_DXA_privacy.html
- Expedition NEWS http://www.heardisland.org/HD_pages/HD_news.html
- NEWS index http://www.heardisland.org/HD_pages/HD_news_index.html
- DX NEWS <http://www.vk0ek.org>
- Newsletters http://www.heardisland.org/HD_pages/HD_newsletter.html
- Newsletter subscribe http://www.heardisland.org/HD_pages/HD_newsletter.php

PROPAGATION

- WSPR Net <http://www.wsprnet.org/>
- N6BV propagation charts <https://vk0ek.files.wordpress.com/2014/09/heard-mar-2016-vk0hd.pdf>
- Propagation from Atlas <https://k6tu.net/?q=node/add/dx-prediction-vk0ek-atlas>
- Propagation from Spit Bay <https://k6tu.net/?q=node/add/dx-prediction-vk0ek-spit>
- VOACAP DXpedition charts <http://www.voacap.com/dx.html>

THE VOYAGE

- Tracking the vessel <https://share.delorme.com/VKØEK>
- Buoy cams <http://www.ndbc.noaa.gov/buoycams.shtml>
- NOAA buoys <http://www.ndbc.noaa.gov/>
- ARGO buoys <http://argo.whoi.edu/>

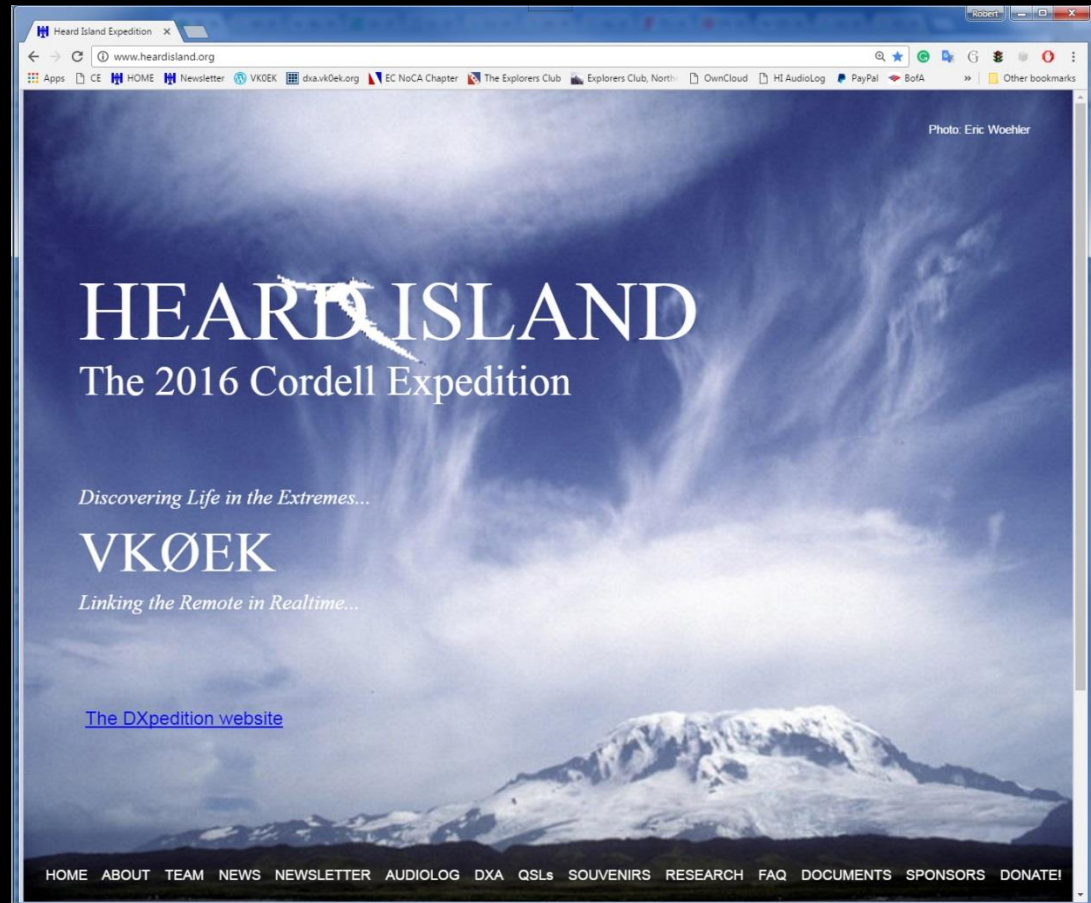


Use ctrl-click to follow links

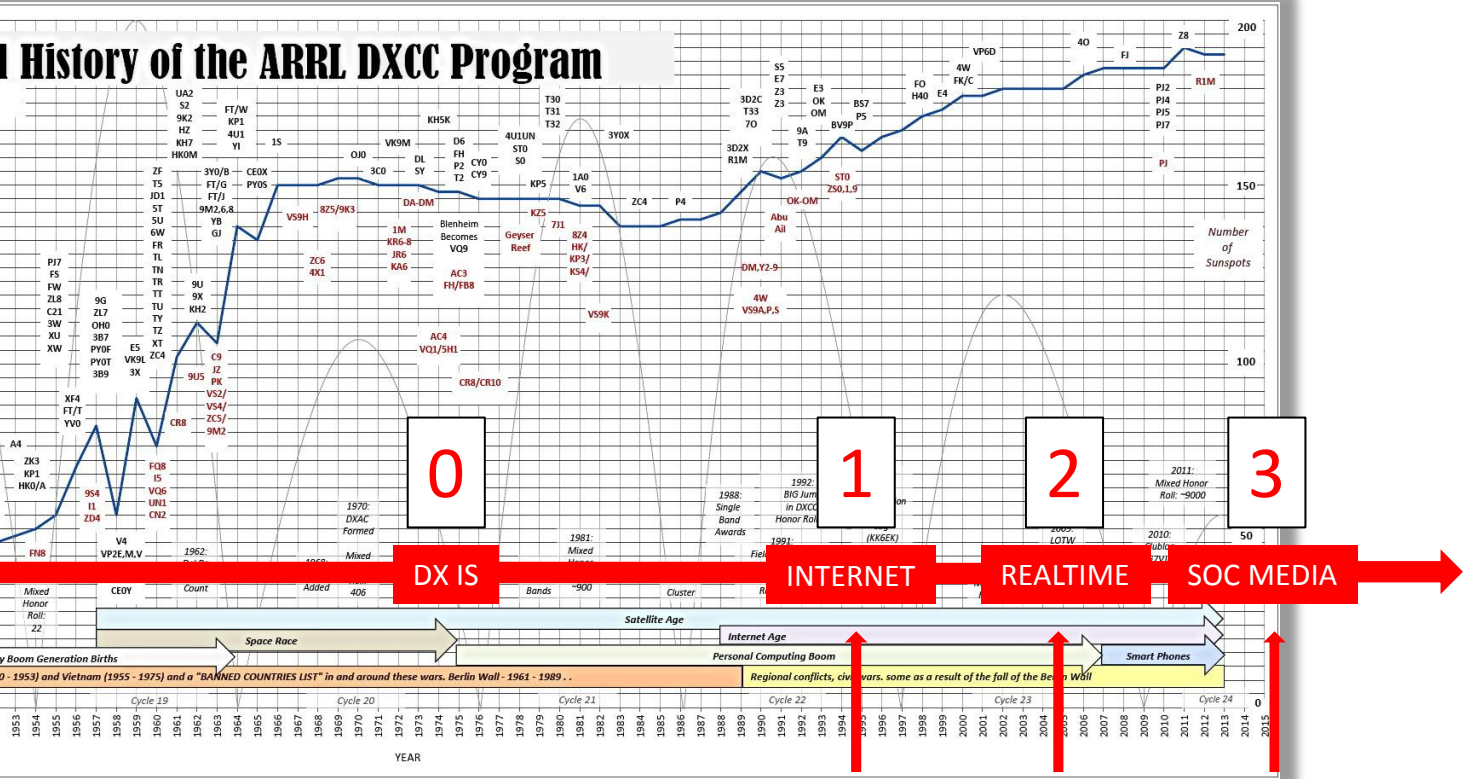
Advanced use of Social Media

Heard Island
VKØEK 2016

www.heardisland.org



The Phases of DX



XRØY
1995

K7C
2005

VKØEK
2015

PHASE 4 2025-2030

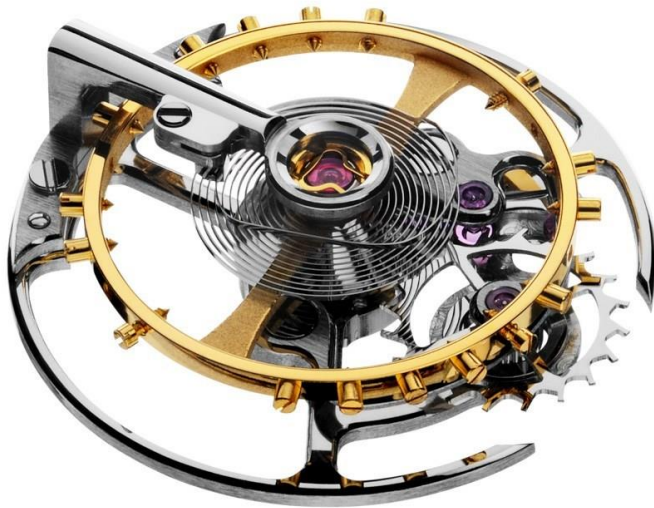
SYSTEMS

4

Systems Engineering

Definition

“A branch of engineering which concentrates on the design and application of the whole as distinct from the parts.”



Parts

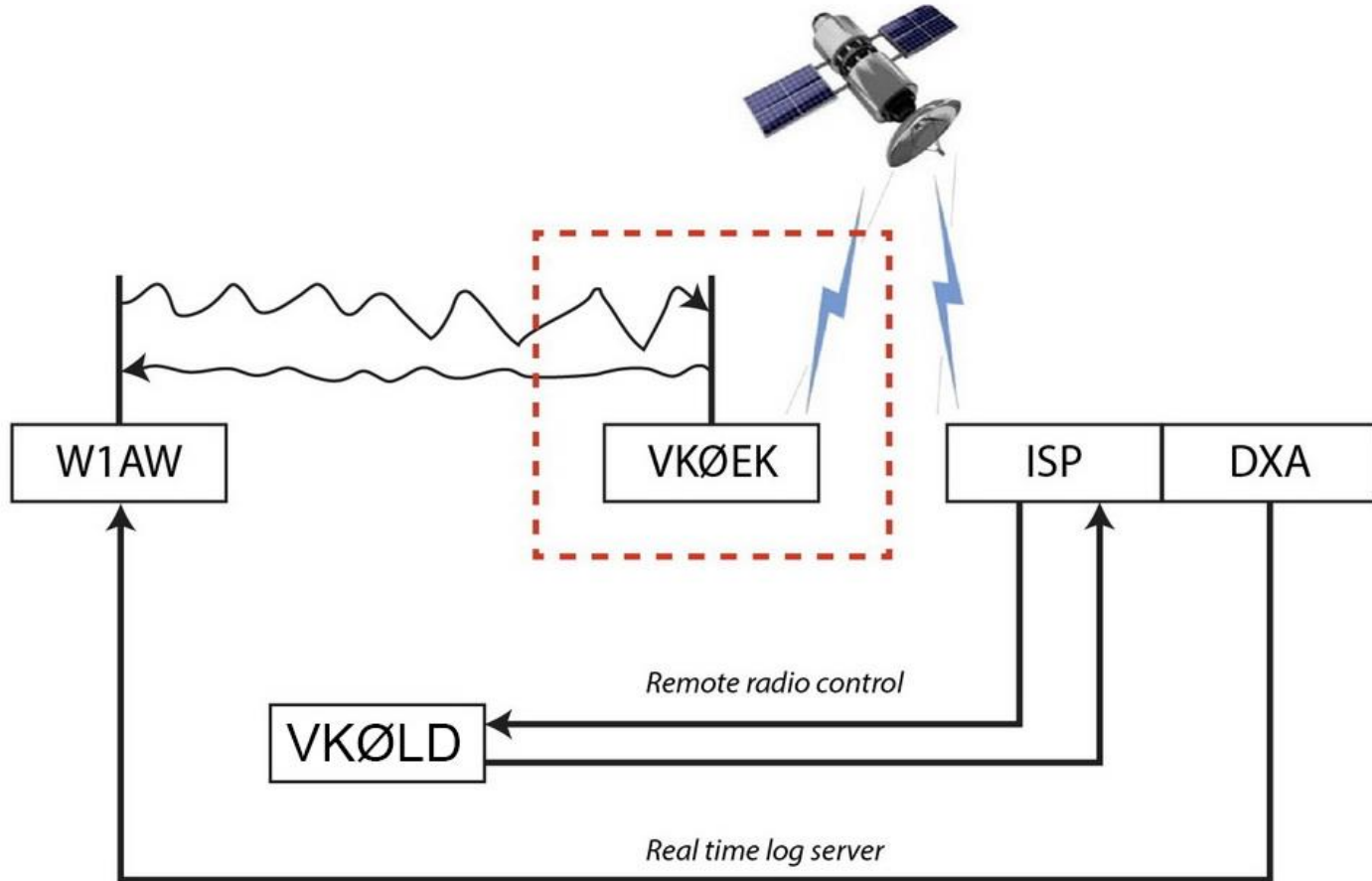


System

Components of DX Systems

- ✓ Remote operation
- ✓ Software-defined radio
- ✓ New modes (e.g. JT65)
- ✓ Adaptive signal processing
- ✓ Automatic (unattended) logging
- ✓ Integrated station operation
- ✓ Signal optimization
- ✓ Cooperative activities
- ✓ Evolution of program rules (e.g., DXCC)
- ✓ Event-wide optimization
- ✓ Coordination with other activities
- ✓ Active offsite team members
- ✓ QSL operation

Example: Remote operation



Example: Software-defined radio (SDR)



Example: Real-time auto-selection of best signal



Only the optimum signal fed to output

Example: New modes JT65

JT65-HF Version 1.0.7 [RB Enabled, online mode, Logged In, QRG = 14076.1 KHz] [de NW7US]

Setup Rig Control Raw Decoder Stations Heard Transmit Log About JT65-HF

Audio Input Levels
 L: 0
 R: -20
 Optimum input level is 0 with only background noise present.
 Digital Audio Gain
 L: 0
 R: 0

2011-Feb-03
 15:11:51

Left click waterfall to set TX CF, right click sets RX CF. Current Operation: Idle RX/TX Progress

Color-map Brightness Contrast Speed Gain
 Blue 5 0 Smooth

Message To TX: VERTCL TU 73
 TX Text (13 Characters) TX ENABLED
 VERTCL TU 73 Enable TX Halt TX
 TX Generated
 SP4KMNW7US R-23 TX Even TX Odd

Double click an entry in list to begin a QSO. Right click copies to clipboard.

UTC	Sync	dB	DT	DF	Exchange
15:11	4	-18	-0.2	-764	B 10W Y4EL TU
15:09	1	-21	-0.4	-764	B NW7US SP4KM RRR
15:07	3	-15	-0.4	-767	B NW7US SP4KM -16
15:05	3	-23	-0.2	-767	K CQ SP4KM K003
15:04	7	-13	-0.3	371	K CQ N2PPI FN30
15:04	8	-3	-0.1	-124	B ON3YE W4UAT CM97
15:04	4	-6	-0.2	-598	B CQ W5TT EM45
15:02	5	-14	-0.2	371	K CQ N2PPI FN30
15:02	6	-4	-0.1	-598	B CQ W5TT EM45
15:00	13	-4	-0.3	-598	B CQ W5TT EM45
14:58	8	-9	-0.3	-299	B OE5OJM W5TT -13
14:57	4	-20	-0.3	105	K IK5FKF W1LIC FN54

Use buttons below to call CQ and answer callers.
 Call CQ Answer Caller Send RRR

Use buttons below when answering CQ.
 Answer CQ Send Report

TX DF RX DF TX to Call Sign Rpt (-#)
 -767 -767 TX DF = RX DF SP4KM -23
 Log QSO

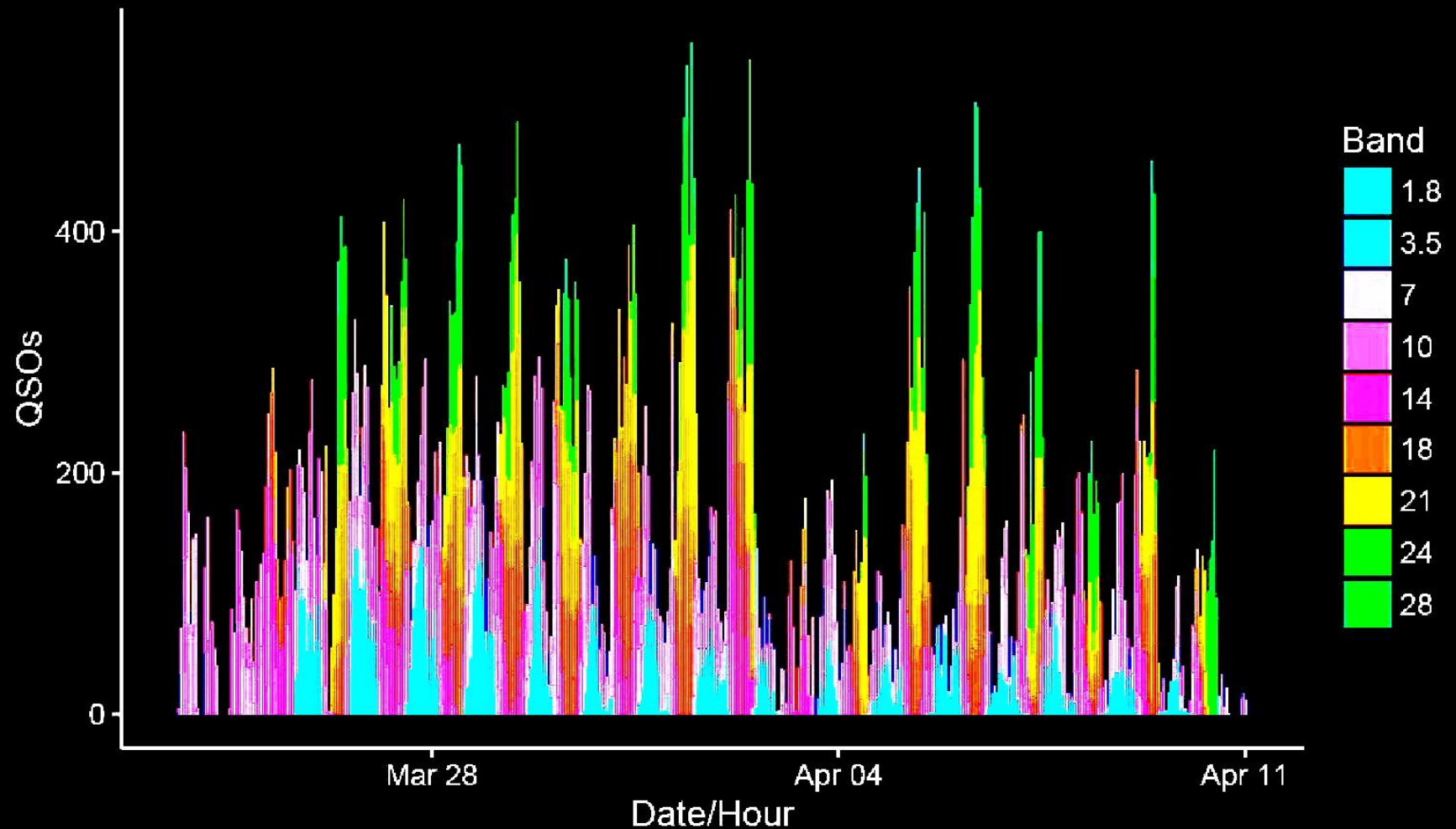
Single Decoder BW AFC Noise Blank
 50

Enable Multi-decoder Dial QRG KHz
 14076.1

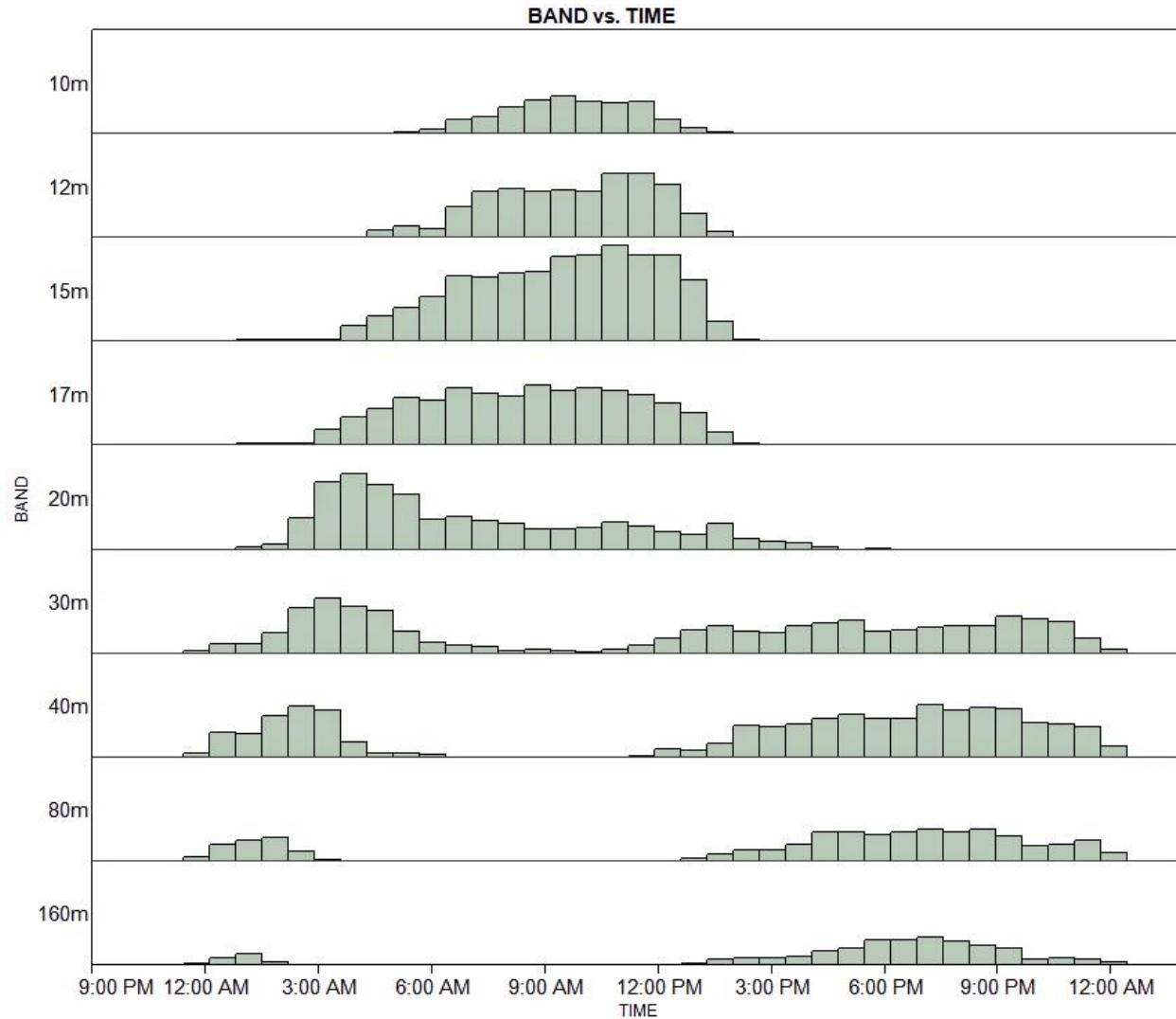
Reports Sent
 Enable RB 472
 Enable PSKR 132 Right Click for Menu

Clear Decodes Decode Again

Example: Automatic compilation of signals



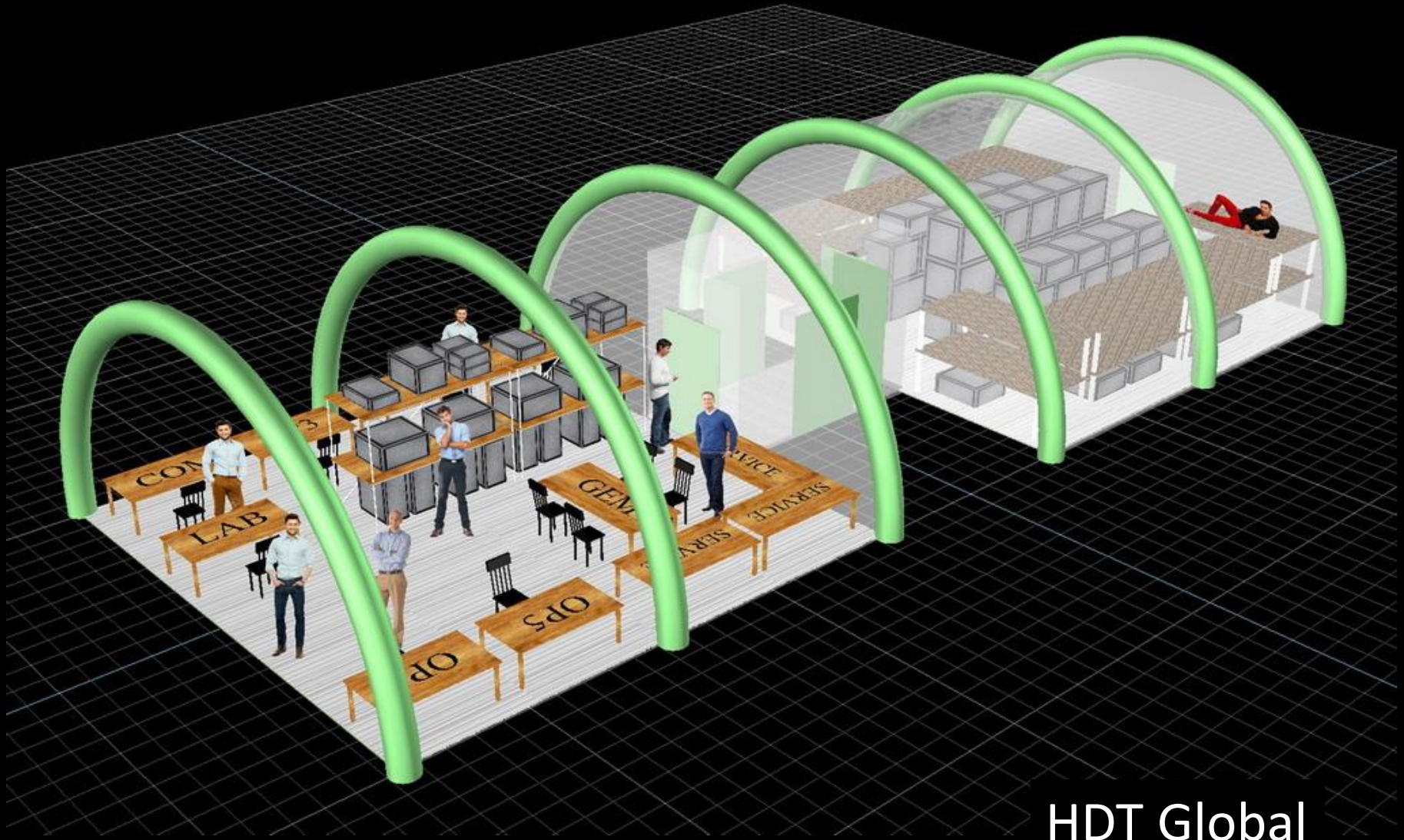
Example: Automatic statistical analysis of signals



Example: Commercial sponsors



Example: The AIRBEAM Shelter



HDT Global

Example: Satellite terminals

Inmarsat
BGAN
Terminals

Example: Living facilities



Disc-O-Bed

Industries that can support DX

MANUFACTURING

Apparel
Chemical
Computer and Electronics
Electrical Equipment
Fabricated Metal
Food and Beverages
Furniture and Related
Machinery
Paper
Plastics and Rubber

DISTRIBUTION

Building Material and Garden Equipment
Clothing
Electronics and Appliances
Food and Beverages
Furniture and Furnishings
Gasoline and Fuel
Motion Picture and Sound Recording
Motor Vehicle and Parts
Sporting Goods, Hobbies, Books, and Music

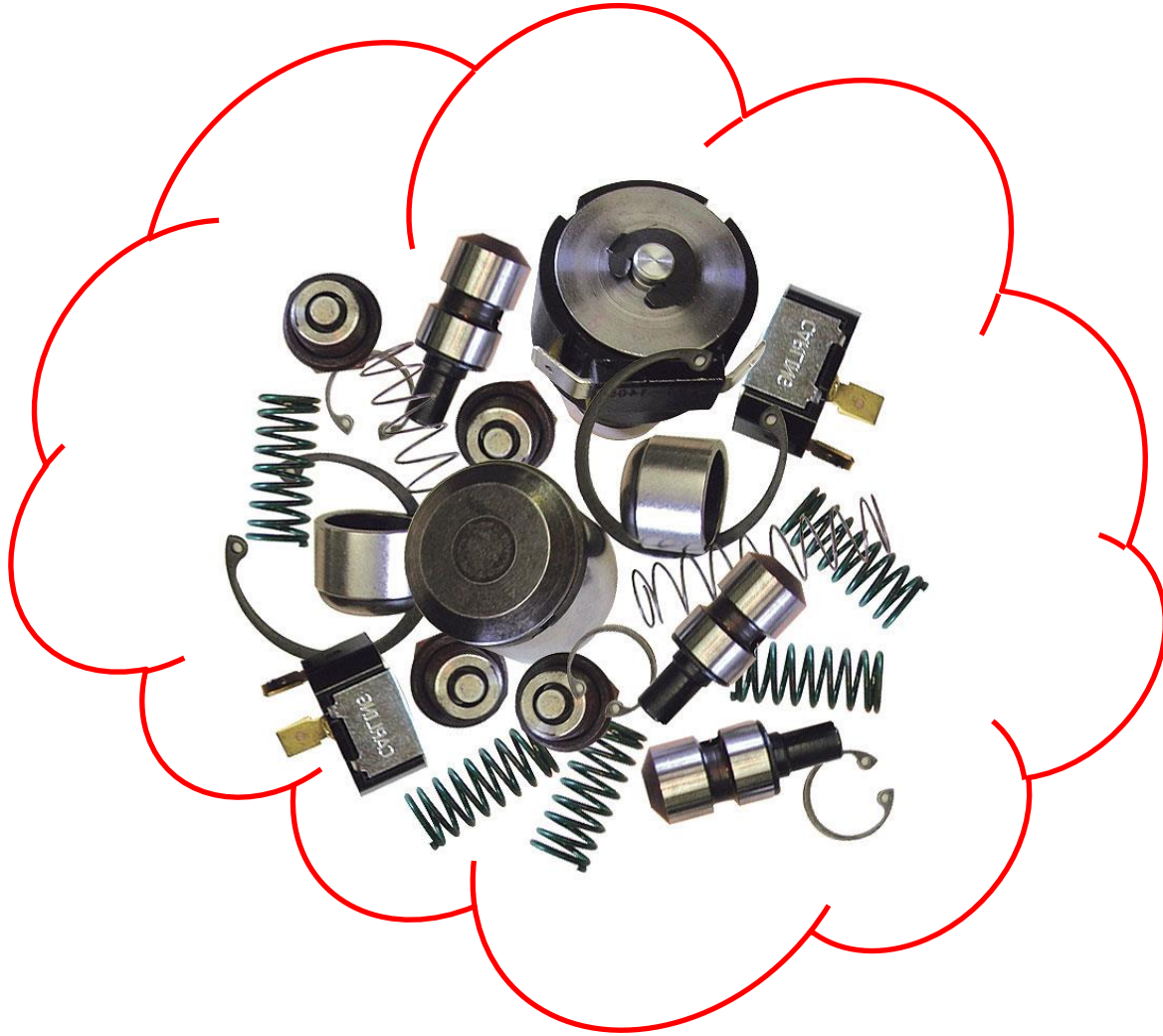
SERVICE

Accommodation
Air Transport
Broadcasting
Construction
Data Processing
Electronics supply
Finance
Food Services
Health Care
Insurance
Internet Publishing and Broadcasting
Personal and Laundry Services
Postal Service
Printing and Related
Publishing
Rental and Leasing
Scenic and Sightseeing Transportation
Telecommunications
Transit and Ground Transport
Warehousing
Warehousing and Storage

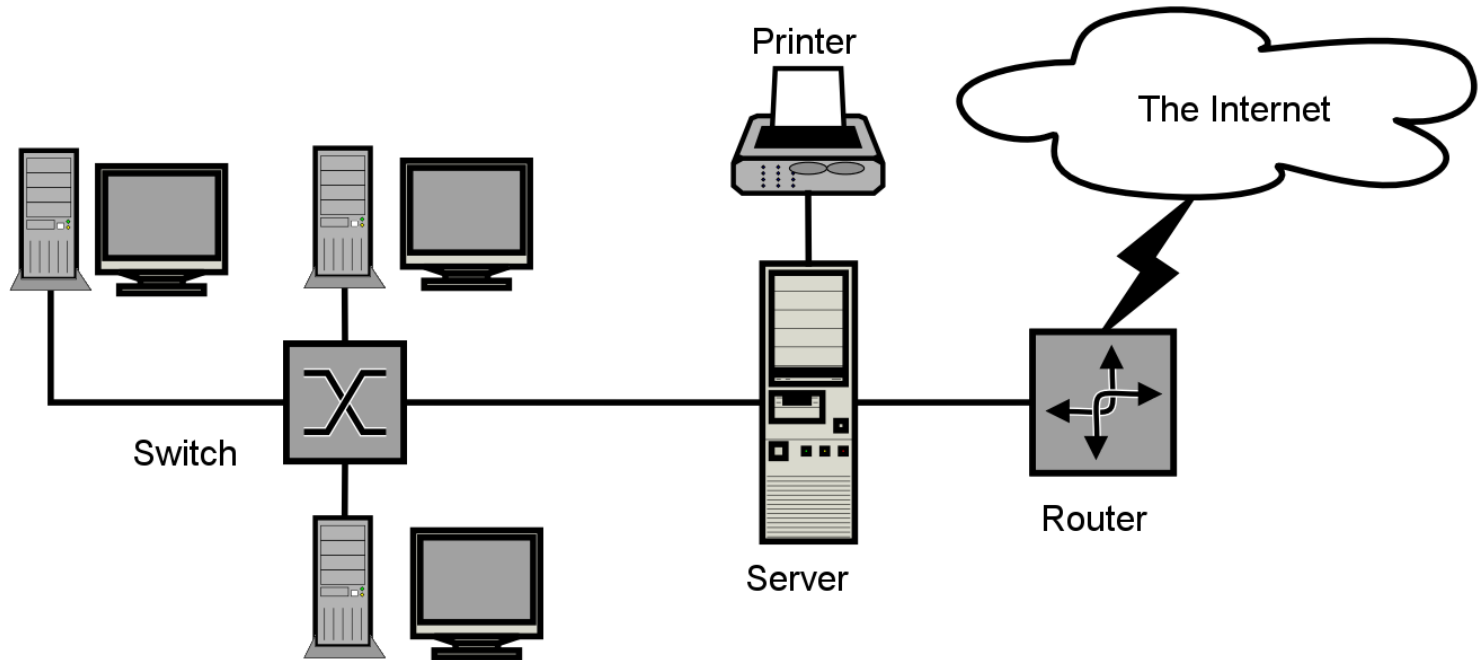
Procedural aspects of Systems Engineering

- ✓ Requirements definition
- ✓ **Design**
- ✓ Coordination
- ✓ Logistics
- ✓ Reliability
- ✓ Evaluation
- ✓ Risk management
- ✓ Testing
- ✓ Maintainability

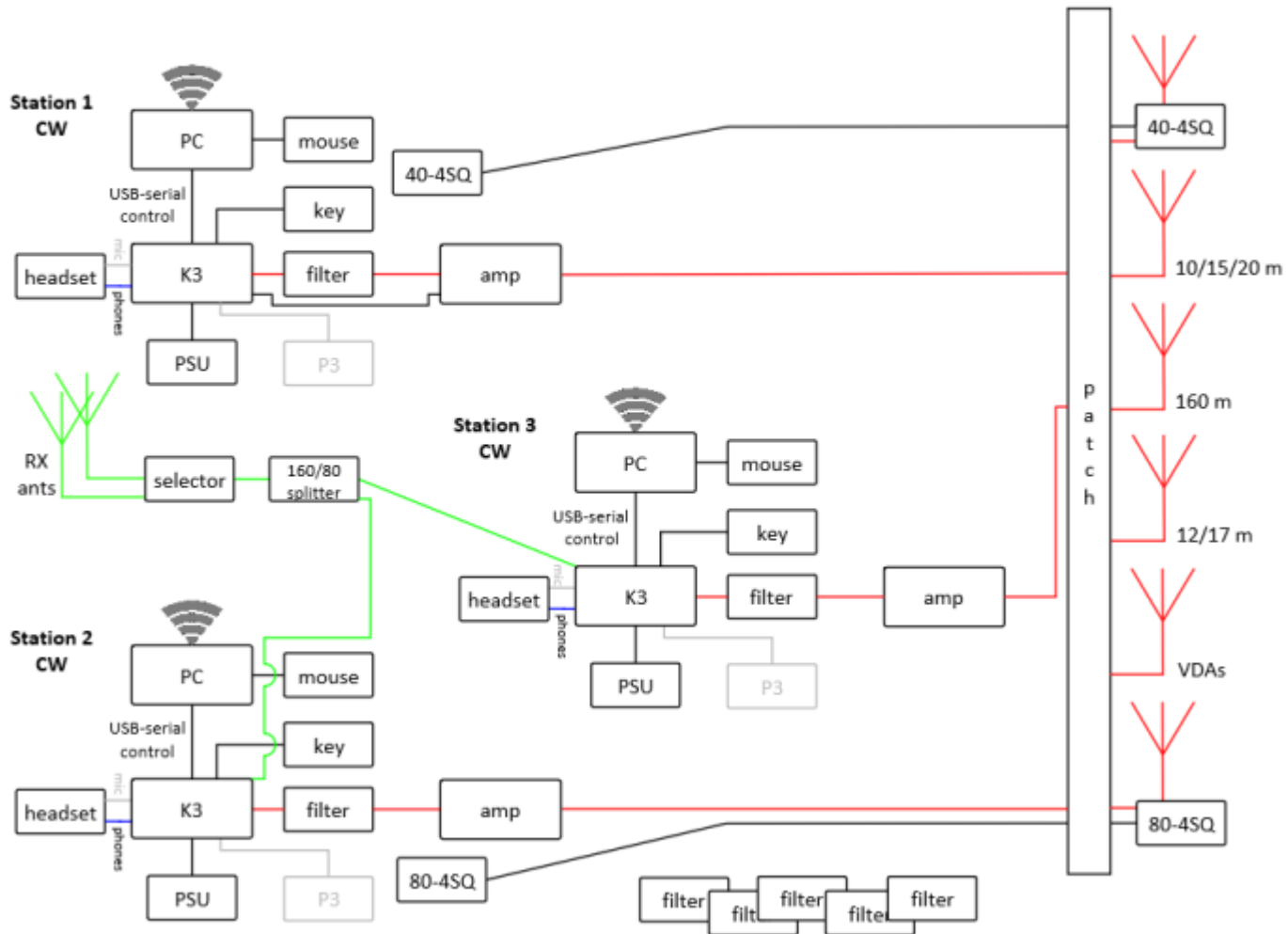
Any collection of parts can be a System



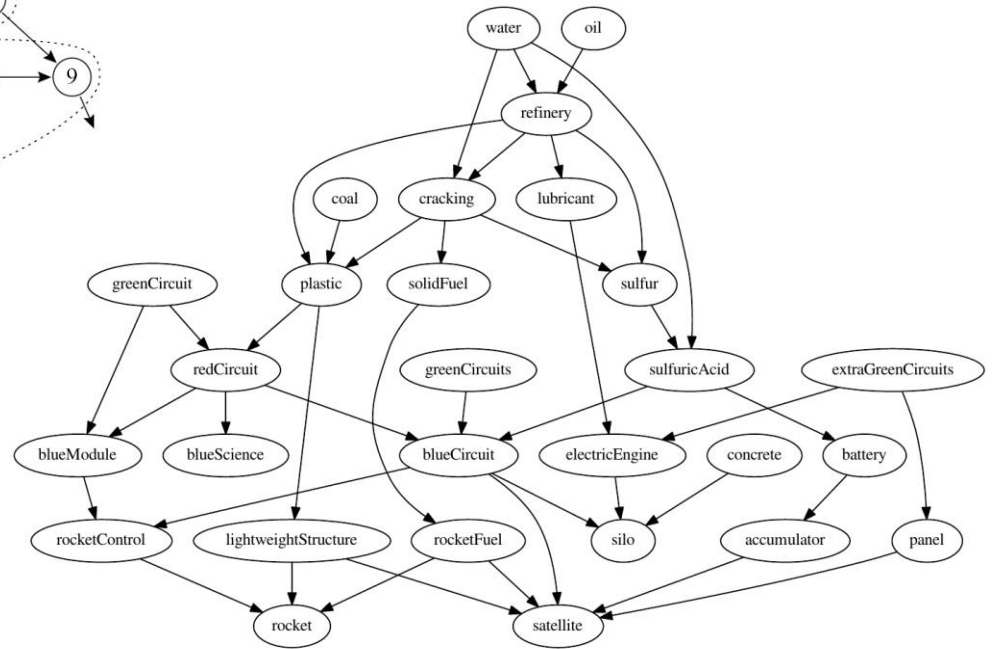
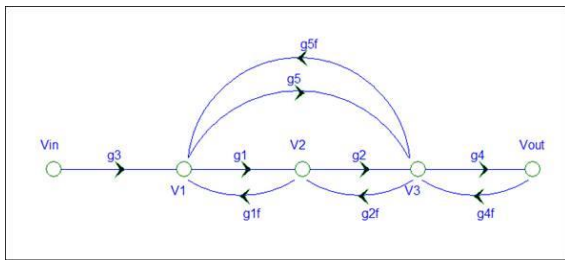
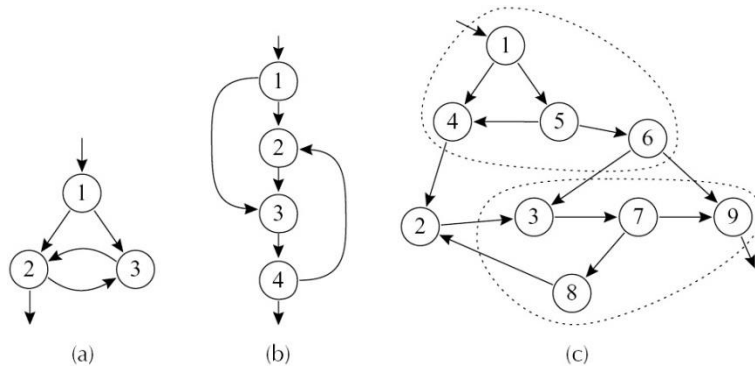
Example: Network Diagram



Heard Island CW Stations (Example of a Network Diagram)

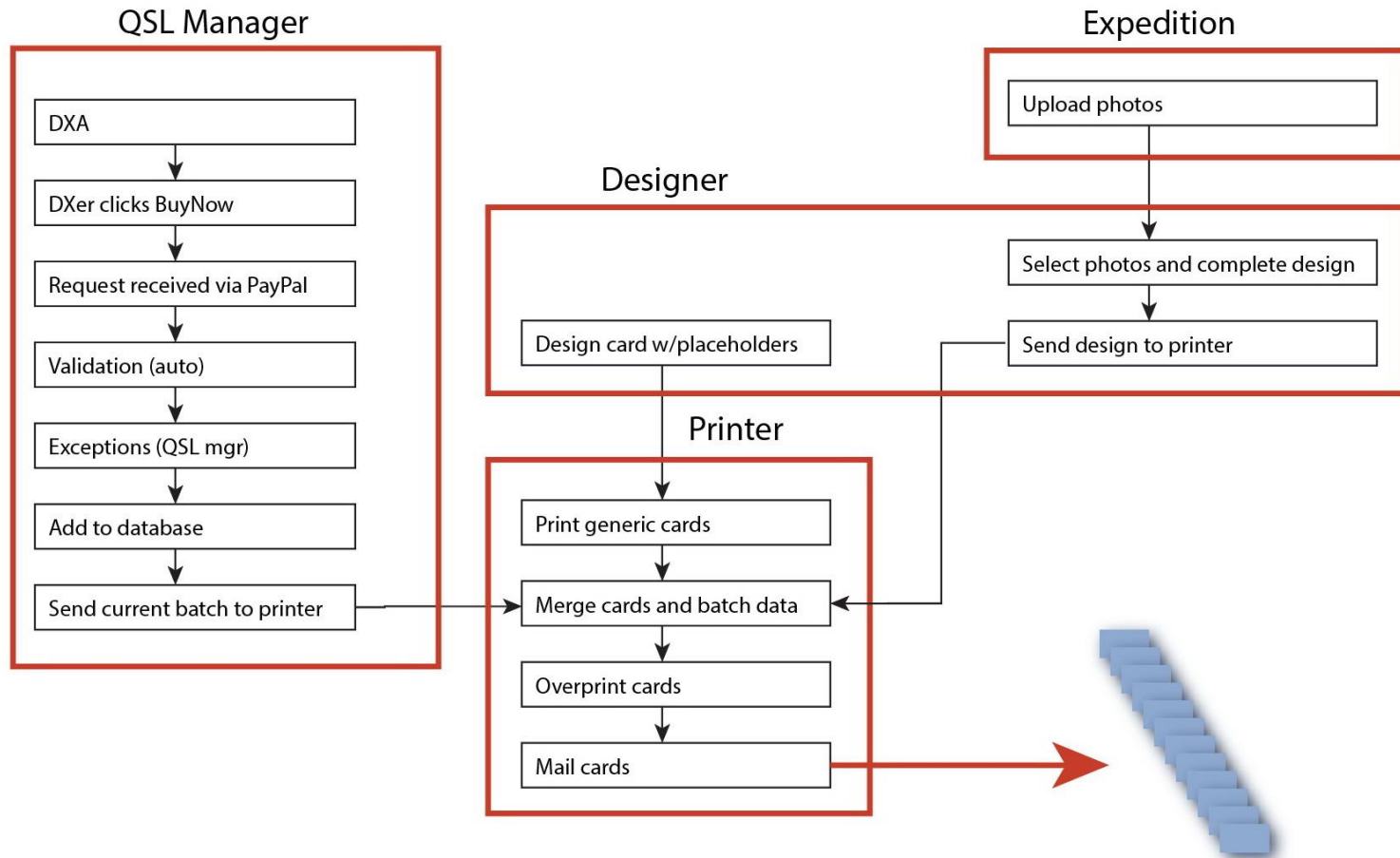


Example: Flowgraphs

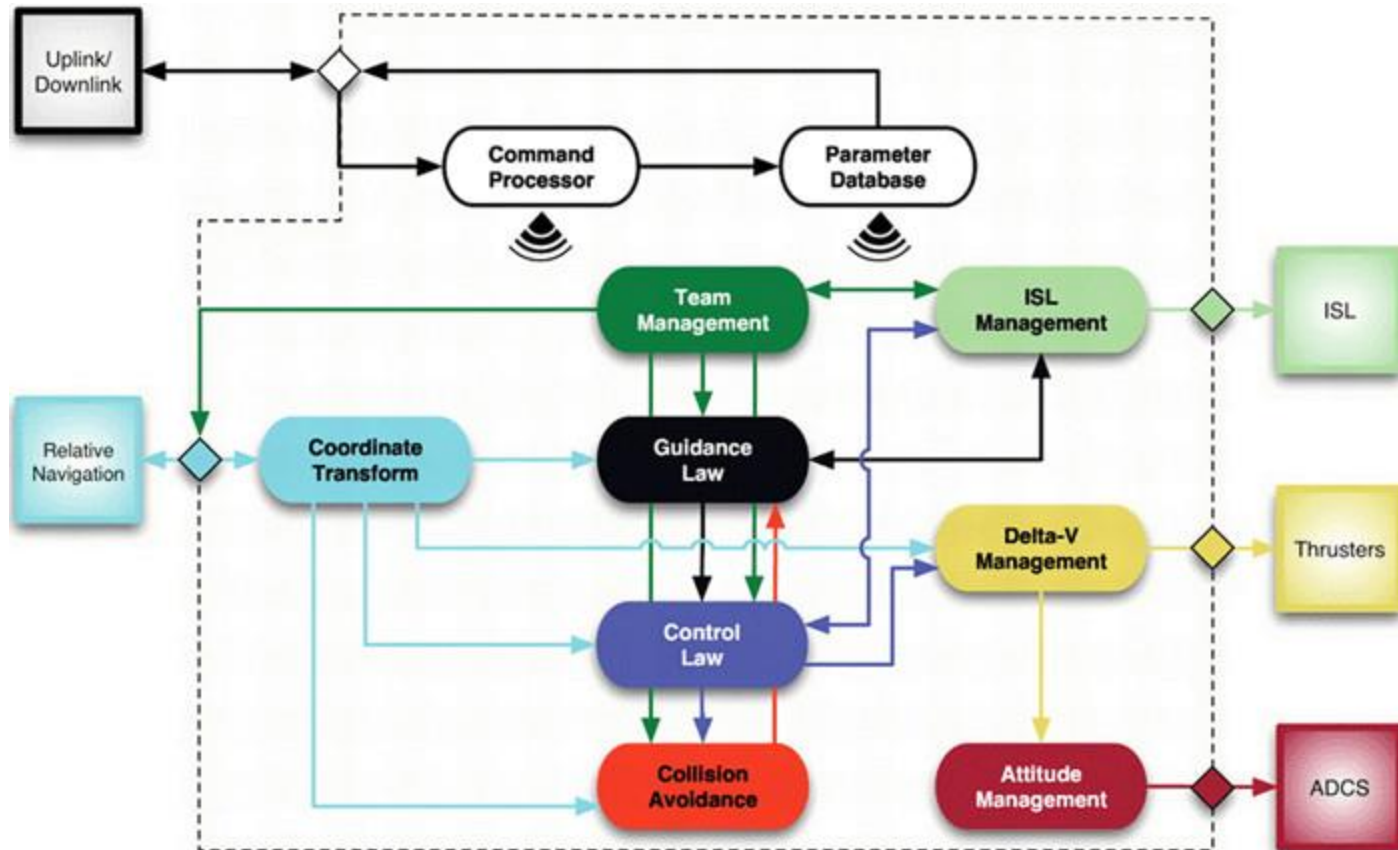


QSL Processing Procedure

(Example of a Flowgraph)

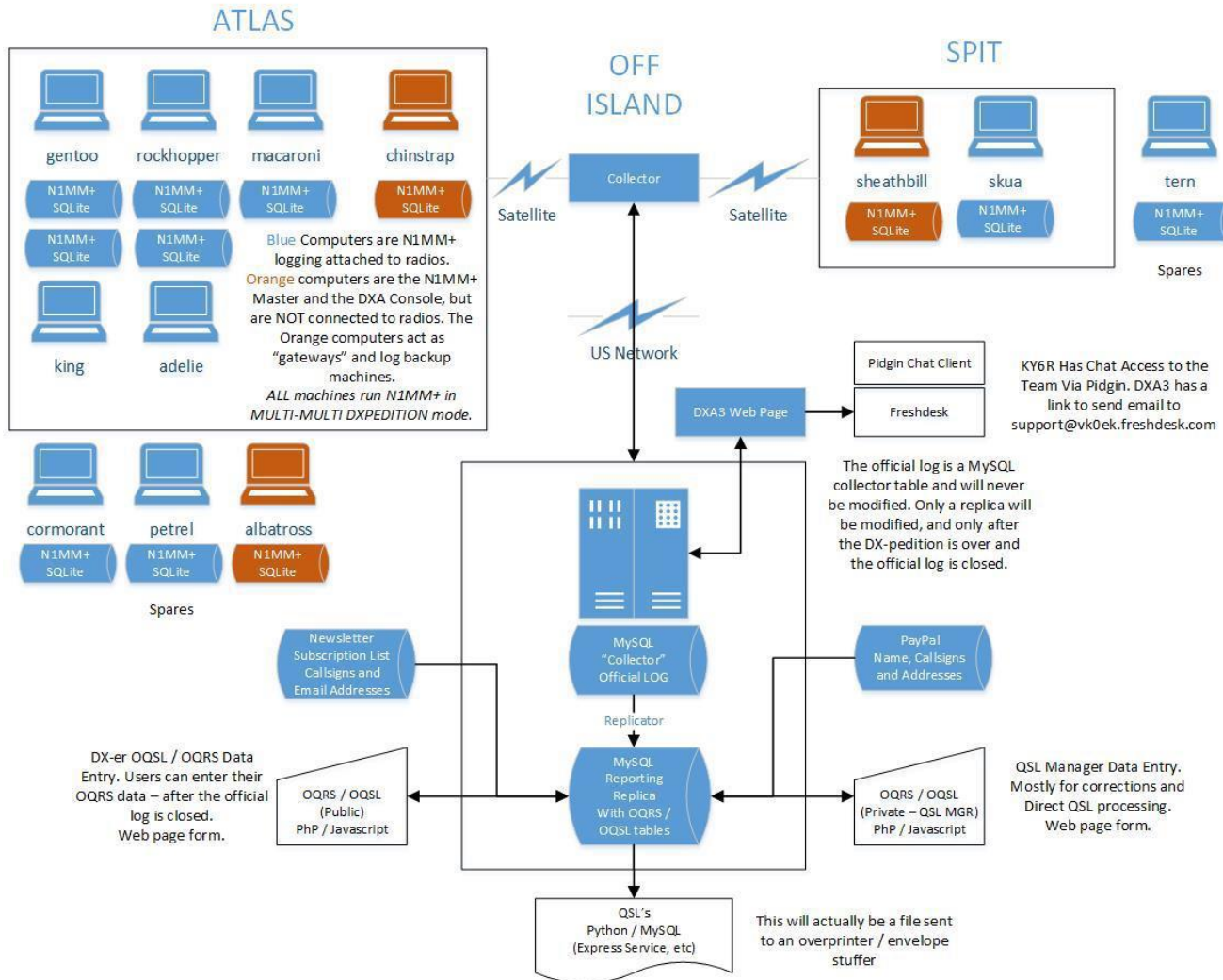


Example: Architectural Interconnect Diagram



DX Station Connection Diagram

(Example of an Architectural Interconnect Diagram)



DX as a System

SYSTEM = {Part 1, Part 2}

Part 1 = DXer

Part 2 = DXpedition

SYSTEM = {DXer, DXpedition} \equiv **DX**

“DX” defines a System

DX =

DXer

Person
Operator
Spouse
Family
Interrupters
Equipment
Radio
Amplifier
Antenna
Power
Logging
Program
Goals
Rules
Monitoring
Procedures
Operating
Optimization
Limits

DXpedition

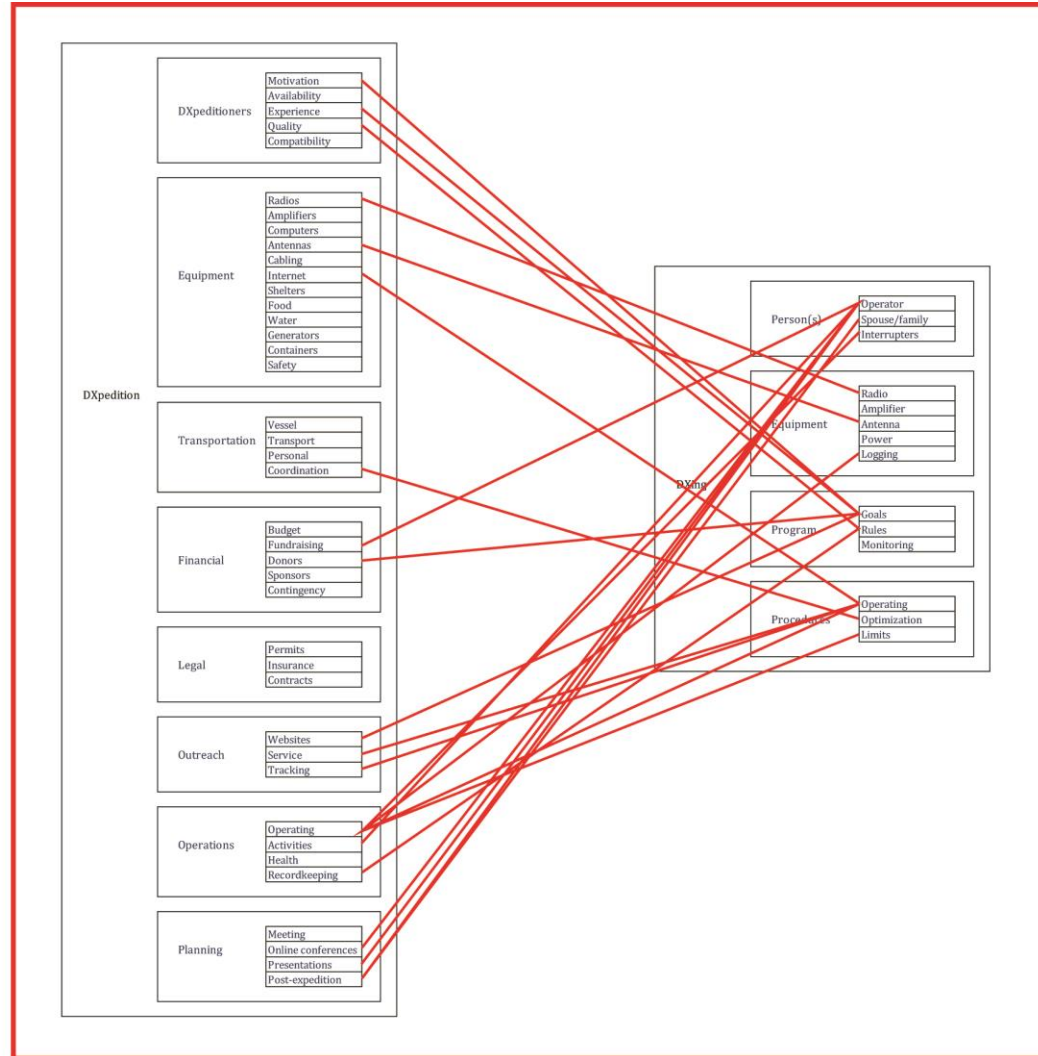
DXpeditioners	Coordination
Motivation	Financial
Availability	Budget
Experience	Fundraising
Quality	Donors
Compatibility	Sponsors
Equipment	Contingency
Radios	Legal
Amplifiers	Permits
Computers	Insurance
Antennas	Contracts
Cabling	Outreach
Internet	Websites
Shelters	Service
Food	Tracking
Water	Operations
Generators	Operating
Containers	Other activities
Safety	Health
Transportation	Recordkeeping
Vessel	Planning
Transport	Meeting
Personal	Online conferences
	Presentations
	Post-expedition

DX as a Connectivity Diagram

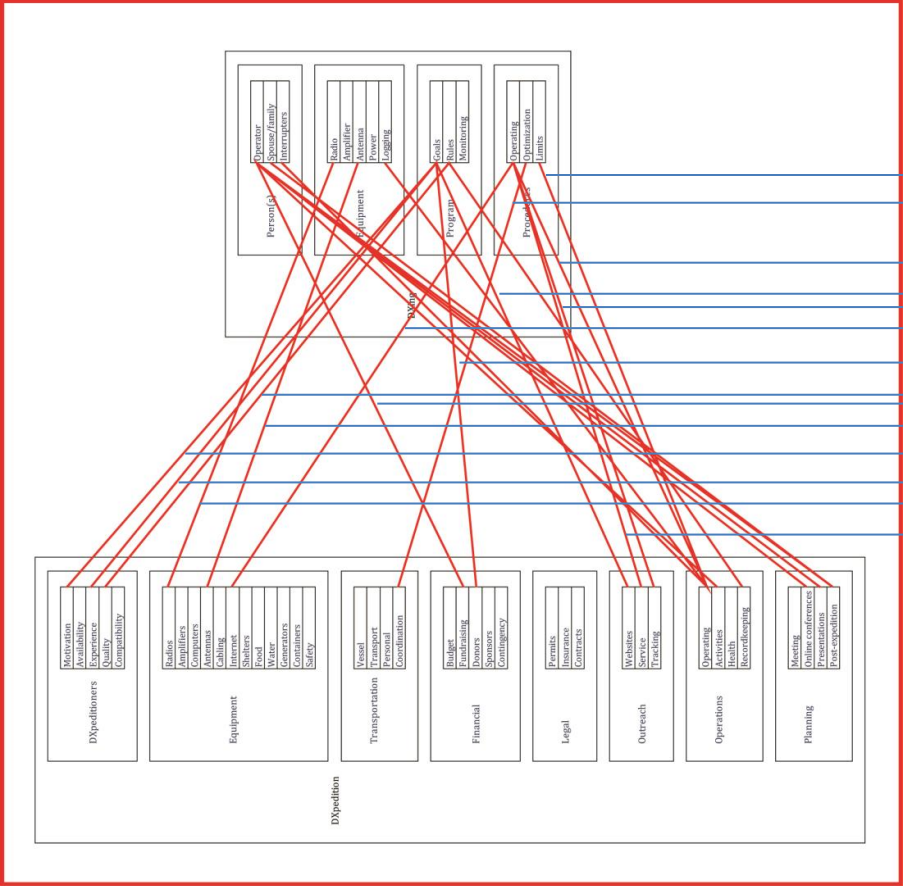
DXpedition

DXer

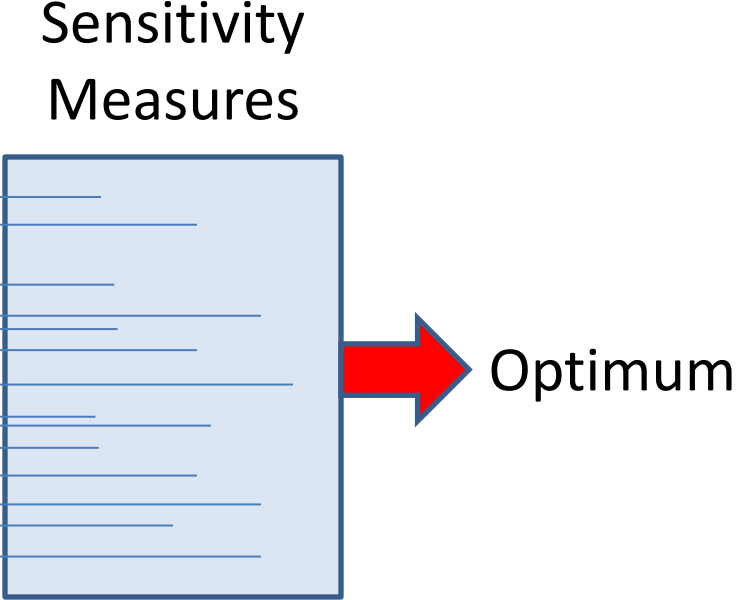
DX =



Optimizing the Connectivity Diagram



DX =



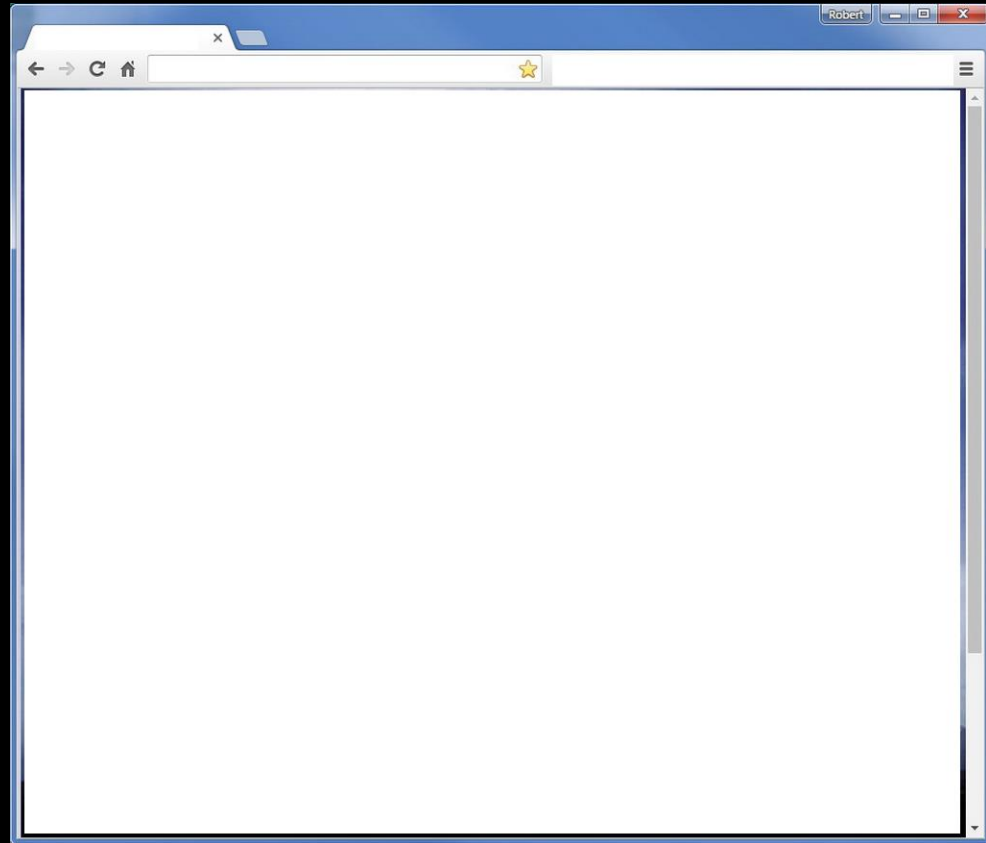
Who will do the Systems Engineering?

- ✓ Young computer nerds
- ✓ Tech-savvy amateurs
- ✓ Professional developers
- ✓ Senior advisors

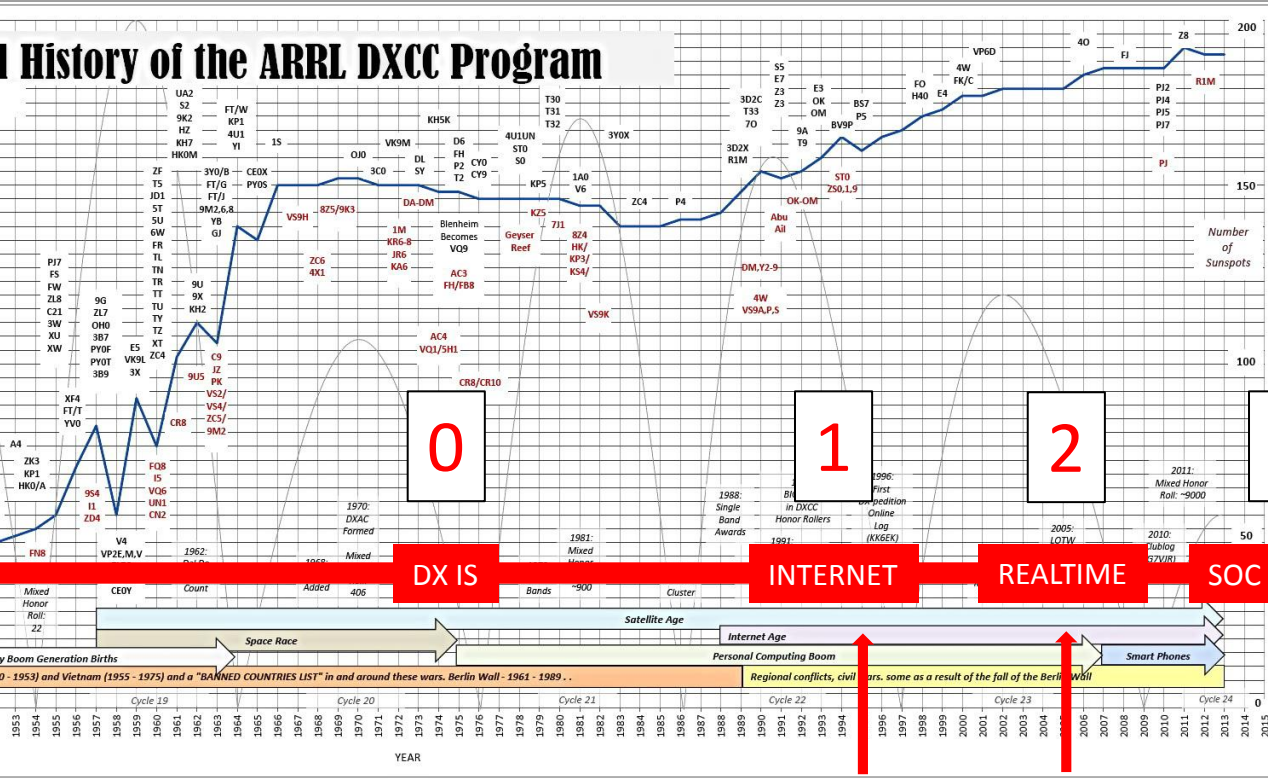
Systems Engineering will be both
Necessary and Sufficient
...until the next Phase!

Extensive Use of Systems Engineering

Who?
When?
What?
How?



The Phases of DX



0

1

2

3

4

DX IS → **INTERNET** → **REALTIME** → **SOC MEDIA** → **SYSTEMS** →

XRØY
1995

K7C
2005

VKØEK
2015

???
2025

PHASE 5 2030+

SOCIETY, EARTH, TECHNOLOGY

5

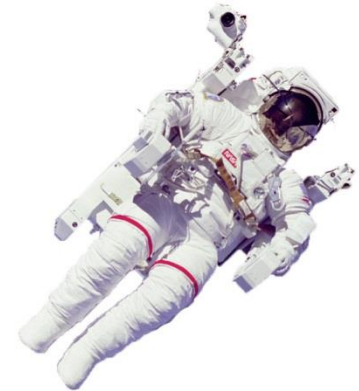
The BIG Question

What will DX be in 25 years?

- ✓ Relevance to social concerns
- ✓ Integration with other programs
- ✓ Promoting causes or activities

Analogous activities

- ✓ Space program
- ✓ Sports events
- ✓ Auto races



The Devaluation of Distance

Distance as an issue is devalued:

$$DX \rightarrow X$$

The future of DXing and DXpeditions

$$X = \left\{ \begin{array}{l} \text{Society (S)} \\ \text{Earth (E)} \\ \text{Technology (T)} \end{array} \right\}$$

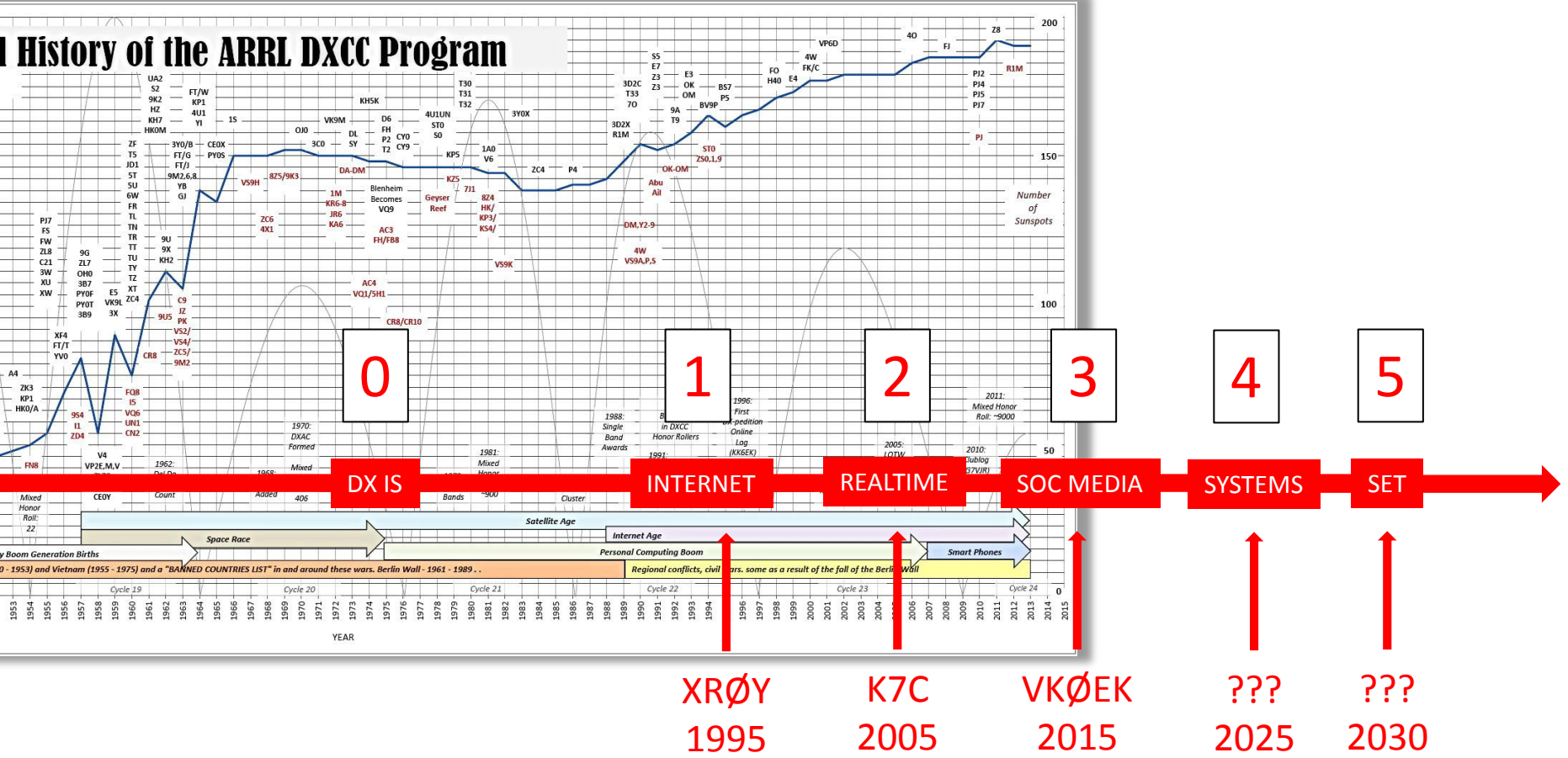
$$X \equiv \{S, E, T\} \equiv SET$$

What to think about

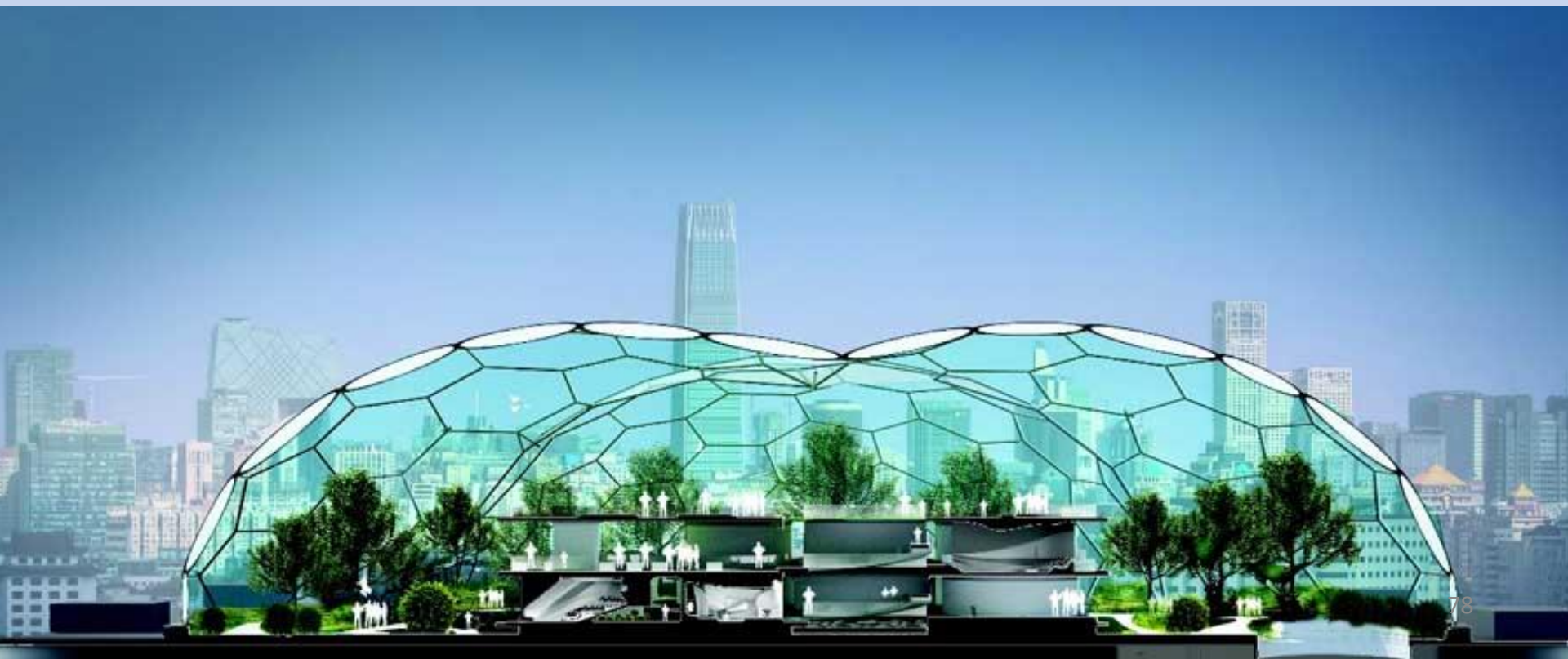
Combining DX with promoting causes

- ✓ Administration of justice
- ✓ Climate change
- ✓ Disadvantaged persons
- ✓ Energy supply
- ✓ Health care
- ✓ Natural resources
- ✓ Pandemics
- ✓ Poverty and malnutrition
- ✓ Preservation of history
- ✓ Racial issues
- ✓ Scientific research
- ✓ Stability of government
- ✓ Wildlife protection
- ✓ World peace

The Phases of DX



YOUR PART IN THE FUTURE OF DX



The (New) Principle and Definition of DX

The (20th Century) Fundamental Principle:

~~The DXpedition is a performance for the DXers~~

The (21st Century) Reality:

What DXers want: Callsigns in the log

What DXpeditioners want: Callsigns in the log

DXers and DXpeditioners want the same thing!

→ The (21st Century) Fundamental Principle:

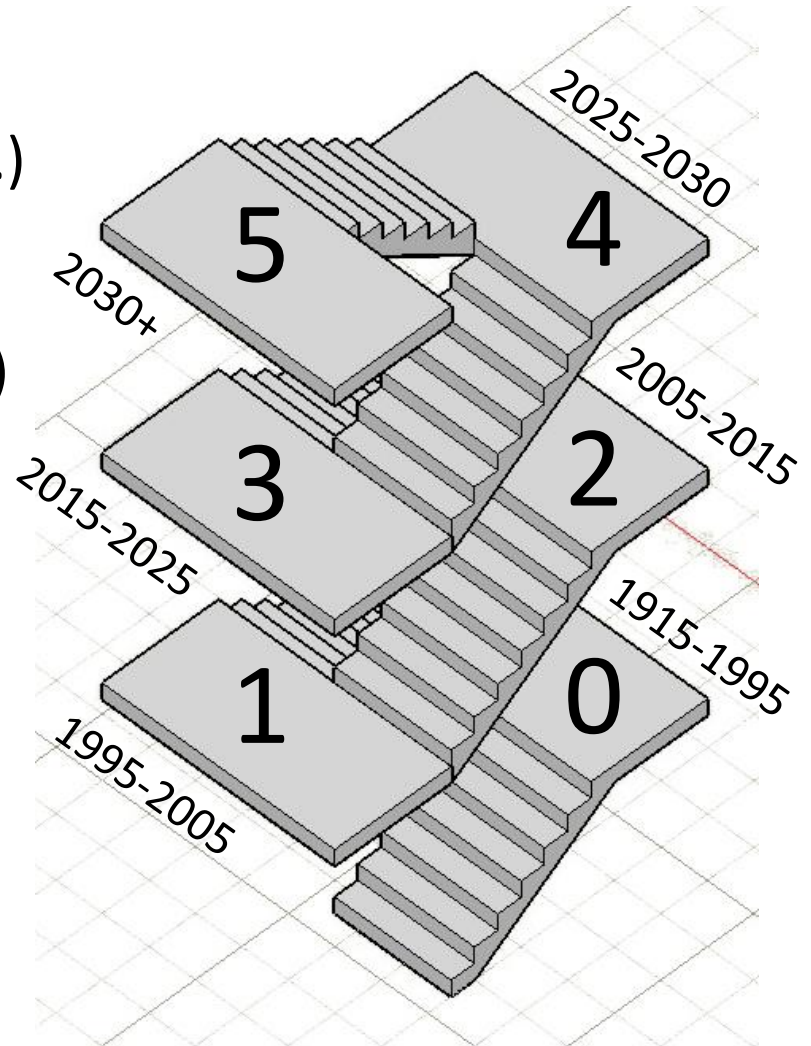
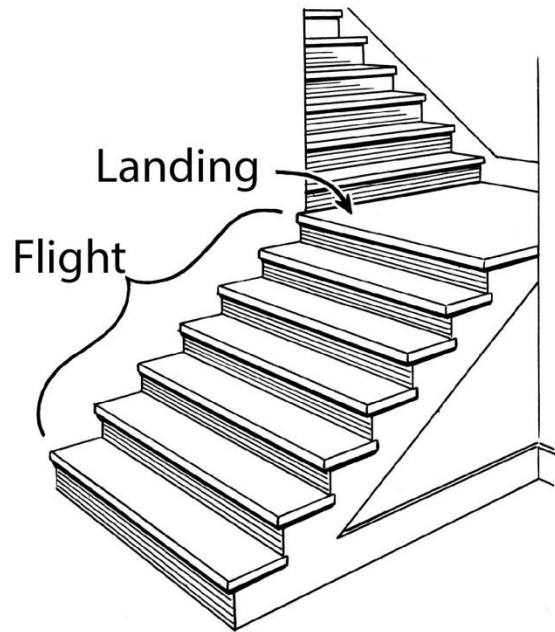
DX is a cooperative activity involving a single team:

DX = DXpedition + DXer

Staircase Diagram of DX

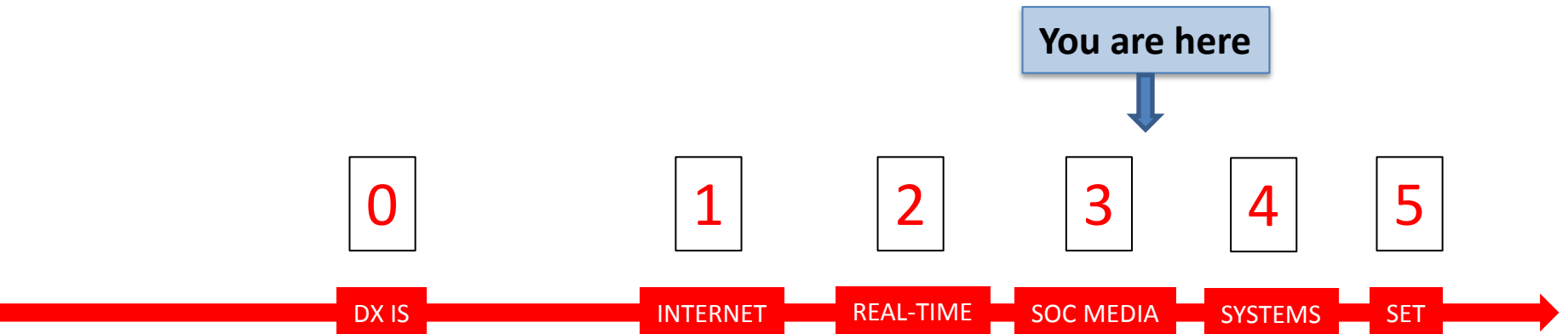
Flight \equiv The Components of DX
(Radios, QSLs, Satellites, etc.)

Landing \equiv DX Phase Transition
(e.g., Real-time \rightarrow Systems)



Summary of the Phases of DX

Phase 0	1915-1995	DX IS!
Phase 1	1995-2005	Internet
Phase 2	2005-2015	Real-time
Phase 3	2015-2025	Social Media
Phase 4	2025-2030	Systems
Phase 5	2030+	Society,Earth,Technology (SET)



The Big Choice for DX persons

- Stay in the 20th Century
- Find a rich person and be happy
- Complain and criticize
- Drop out
- Embrace technology
- Think Internet, Real-time, Systems

A few recommendations...

What DXpeditioners should do

→ *Designate a Systems Manager
for the DXpedition*

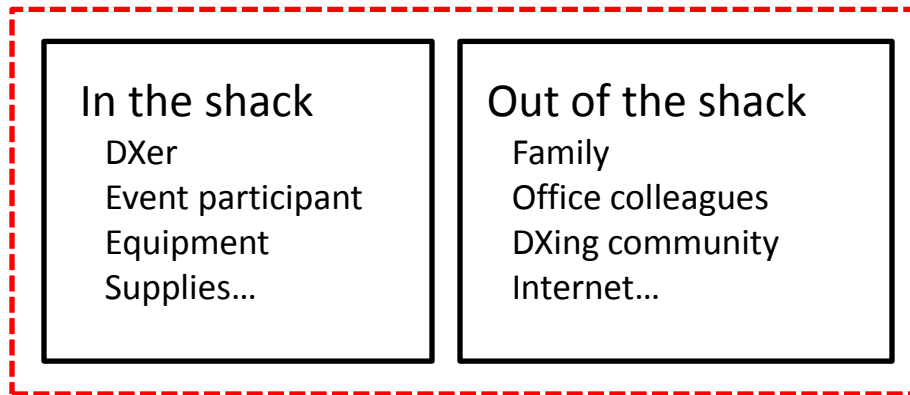
DXpedition Systems Manager



What DXers should do

→ *Create your own Systems Manager
for the Event*

Event Systems Manager



What the DX Special Interests should do

➤ DX clubs, organizations, foundations

Define policies that apply to DX Systems

➤ Magazines (DX Magazine, QST, etc.)

Solicit articles on DX Systems

➤ Companies

Incorporate DX Systems advantages in your products

➤ Entrepreneurs

Development of Real-time DX systems

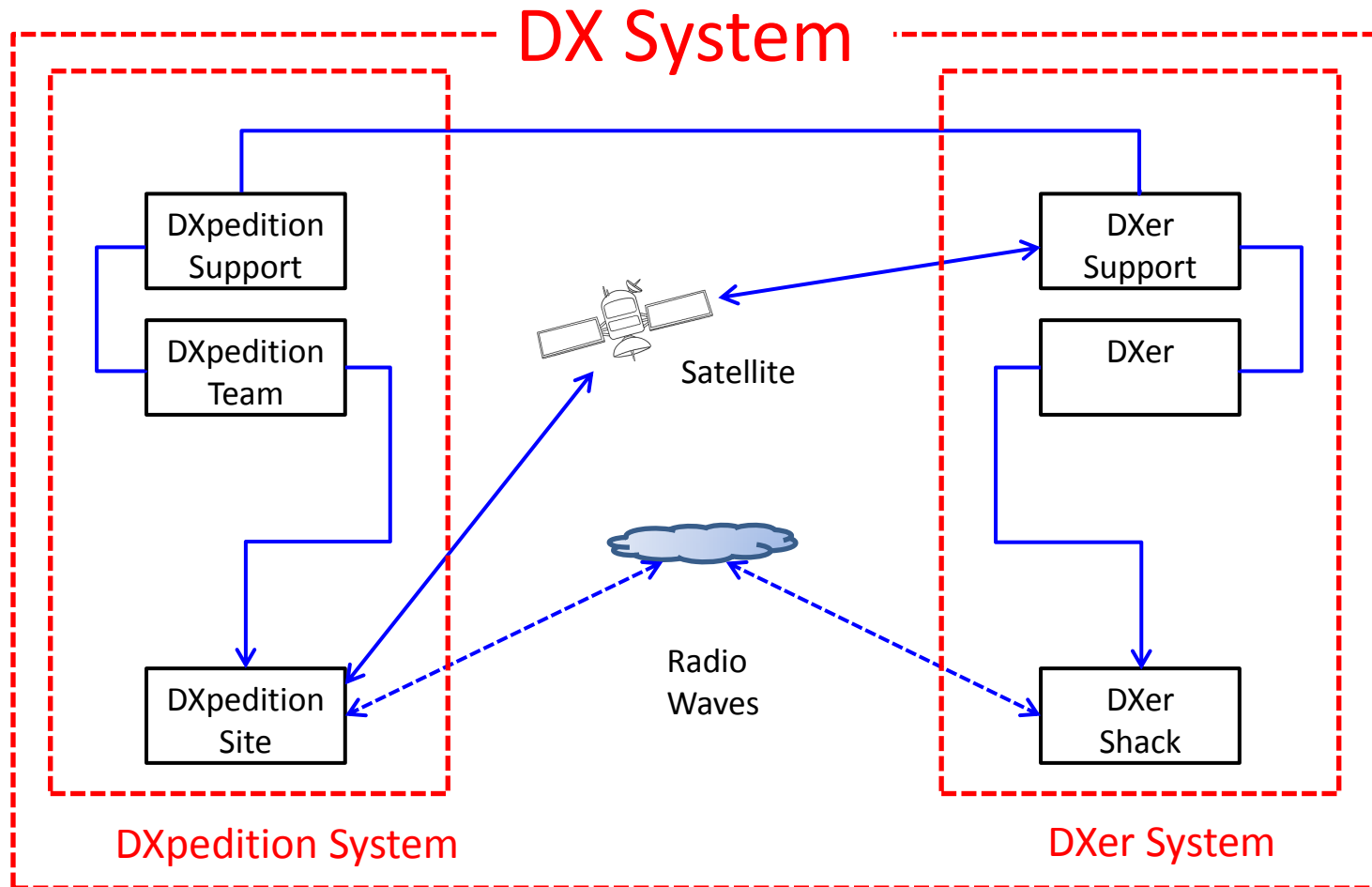
Software tools for designing DX Systems

Services to DX based on DX Systems

Commercial
Opportunities!

What Everyone should do

→ “Think Systems!”



What Everyone should do

→ Get ready to “Think **SET!**”

SOCIETY



EARTH



TECHNOLOGY

The Future of DX

SOCIETY EARTH TECHNOLOGY

SET



