



Amateur Radio: In Search of Relevance

(Author: Willi Vollenweider, HB9AMC, USKA Switzerland, CC BY 4.0)

Questions asked by a 16 year old young STEM talent

1) Promises and Responses in 2022

16-year-old boy/girl:

“Why should I become radio amateur – What’s the point?

I do not see how your suggestion is supposed to help me in my personal and professional life. What’s in for Me?”

Promises made to STEM Talent considering Amateur Radio	Talent answers
You will be talking to other people for free without using your smartphone	What for? My smartphone already does this!
You will learn analogue technologies	Why wasting my time learning inferior technology not useful anymore?
You will learn how communication worked in the last century	Sorry, but I do not want to be a museum curator, a historian or a collector
You will be playing games by radio (called “contests” here)	Grossly inferior to playing computer games. No way!
You will have to live with the fact that our reputation is not favorable in industry and beyond, and that we are not relevant.	For heavens sake! Why should I do this to myself?
You will learn how to use proprietary hard and software	You can’t be serious!
You will be meeting old men who do not even know what you are speaking about. But they will tell of “the good old days”.	Forget it!
You will have to buy expensive equipment	I am not rich!
You will be able to make a living as an analogue radio technician or as a museum curator	Are you kidding ? I want ends meet!
...	...
...	...

Continued: Questions asked by a 16 year old young STEM talent:

2) Promises and Responses by 2025 (hopefully!)

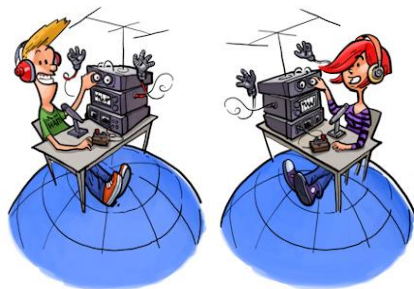
16-year-old boy/girl:

“Why should I become radio amateur – What’s the point?

I do not see how your suggestion is supposed to help me in my personal and professional life. What’s in for Me?”

Promises made to STEM Talent considering Amateur Radio	Talent answers
You will meet and exchange with other STEM minded young people	We will have lots of fun learning from each other!
You will meet proven digital technology experts and learn from them	Saves me lots of time!
You will improve your modern digital skills that are in demand on the labour market	Exactly what I need to assert myself!
You will apply your programming skills to communication problem solving	Today’s world does not function without comm.
You will understand relevant state of the art digital communication technologies	This is very exciting!
You will gain public esteem by becoming an ambassador of modern ICT technologies	I will be proud!
You will learn how to use the current megatrend of “digital transformation” to your personal and professional advantage	my friends will envy me for this!
You will become relevant with school, employers and society	I like this feeling!
Enjoy being part of and contribute to open source communities	I love community work!
The challenging digital license exam sets you apart from others	Good! Provides me a USP!
You will profit from low cost SDR and μ P experimentation material	Saves me lots of money
You will profit from free and open source software for your digital experiments	For free, really? That is fantastic!
You will be able to make a good living as an ICT specialist	Cool! Let’s go ahead!
...	...
...	...

Reaching this goal by 2024 is very ambitious, do-able only by **decisive** action !



Let's Update Radio Amateur's Profile to the 21st century ! (make Profile of Amateur Radio **relevant** again)

I differentiate two paths open to action:

a) "internal"

we define 100% ourselves what we are and what we will be.

In the search for a timely solution, should we not rather define our own "certifications" that incorporate "new technologies" as an easier and quicker way around government regulators? (albeit less effective).

b) "external"

ba) transform existing exam syllabus to "New Technologies" on national and international level (CEPT HAREC).

-> possible if coordinated on IARU level, requiring change of SRLC attitude

bb) introduce a new "Digital License" as full but low power Amateur Radio license parallel to the existing ones, focusing on "New Technologies" whereby deleting outdated technologies.

-> can be done within Member Societies. Missing "roaming" is not tragic.

-> win Ministry of Education, Economy or Science as your project partner!

(role model: Torbjørn Skauli LA4ZCA for his digital entry level license in Norway with the Support of the Research Council of Norway)

"New Technologies" include

- Digital Circuits
- Digital Signals and Digital Signal Processing (DSP)
- Microcomputers and Microcontrollers, Coding, System Software, IDE, Ham applications, Threats/Security
- Digital Communication Technologies for Voice/Data/Video, Protocols, Addressing, Coding, Error Control API's/Libraries, Tools, Internet/Web Technologies 802/W3C, SDR, GNU Radio, RTC, Simulation, etc
- How this all fits into the current megatrend of "Digital Transformation"

.... not really "new", but "new" to the world of Amateur Radio.

ba)

**Project #1: Bring CEPT HAREC Exam Syllabus up to date
(prerequisite for STF)(Status: in planning)**

Update Amateur Radio's Profile First ! (fix the product!)

Old analogue profile has to be replaced by New Technologies.

This is an indispensable prerequisite for success of all subsequent IARU STF efforts.

(time consuming process, due to involvement of authorities and/or politics)

- Keep electronics and radio fundamentals
- replace “analog” by “digital” (insert “New Technologies”)(drop outdated stuff)
- Circuits: modules/subsystems (ICs, Boards, Subsystems) instead of discrete components
- Do not increase complexity of exams! Keep in mind that making active use of radio technologies within assigned frequency bands is a basic citizen's right and regulated only for reasons of public safety. Meaning: everyone who qualifies should be allowed to exert his/her rights!

bb)

**Project #2: Create New Digital License
(top priority)(Status: in planning)**

adopting some of Torbjørn Skauli's ideas for a Digital License (entry level?)

- Goal/USP: Enable young STEM talents to technically understand and make use of the current Megatrend of “Digital Transformation” to the benefits of their education, career and life.
- prerequisite: Coding fundamentals (due to the schools, this requirement is already met by today's young talents without our intervention)
- Electronics and Physics fundamentals
- Circuits: modules/subsystems (ICs, Boards, Subsystems) instead of discrete components
- Digital Circuits and Digital Signals
- Basic knowledge: Digital Communication Technologies for Voice/Data/Video, Protocols, Addressing, Coding, Error Control API's/Libraries, Tools, Internet/Web Technologies 802/W3C, SDR, GNU Radio, μ P, IDE, Simulation, System Software, Ham application examples, etc
- Characteristics of radio waves, propagation, antennas
- National and international legal provisions

Such training may be separated into two sequential entities:

Course 1: acquisition of most of this knowhow without goal of passing a license exam

Course 2: supplementary course to pass the license examination

Suggestions for Projects to reach some of our Strategic Objectives

black: not realized yet in Switzerland

green: in operation in Switzerland, intermediate results available

Project Idea #3: Learning Center – where Hams learn

(HamEcosystem Structure/Platform)(Status: in operation, successful so far)

This is a stage on which we promote primarily “New Technologies”, leaving room for traditional content as well. In USKA, this is public, everyone can join provided he/she registers, i.e. identifies with name and mail address.

Our BigBlueButton (BBB) videoconference platform allows for up to 150 simultaneous participants. Will be expanded as soon as demand overcomes.

- HamWebinar, one hour presentations, free, public, registration required (www.HamWebinar.ch)
- HamAcademy, half or full day seminars, fee, discount for members and youngsters (www.HamWebinar.ch/HamAcademy)

Such “Learning Centers” are also already being operated by DARC, ARRL,

This is a very obvious way both to acquire new members as bringing value added to the existing membership base. And quite easy to do!

The doors are wide open for forms of international cooperation of all kinds! E.g. we had invited speakers from Germany and Norway.

The logical addition to this are our HamGroups, as described next.

Project Idea #4: HamGroups – where Hams meet

(HamEcosystem Structure/Platform)(Status: in operation. successful so far)

HamGroups tackle the challenge of the huge diversity of our Hobby.

There are an estimated one hundred themes of specialization out there. Local clubs are too small to cover even a fraction of them. Thus making adherence to a local club unattractive for many ham who specialize. Those hams are lost for local clubs, but we can still keep them as members of our national associations – thanks to our HamGroups!

HamGroups are scheduled videoconference meetings focused on a specific topic.

More or less unstructured meetings, like “Stammtisch” as we call local club meetings in german but agenda topics can be proposed on the HamGroup’s internal Forum (in Switzerland, a separate Moodle environment is assigned to every HamGroup).

This structure allows young people to join our ranks without having to attend old men’s gatherings in our mostly overaged and often youth-averse local clubs (most of our clubs don’t even have a “youth coordinator”).

Every HamGroup has assigned one or several “moderators” who lead the meetings, publish the agenda (if any) and administrates the content of the moodle repository.

Besides USKA, also DARC/Germany are realizing and further developing this concept, in slightly different ways. Contrary to DARC, Swiss HamGroups do not do project work. A project has a start and an end. HamGroups do not. They are permanent meeting places, allowing anyone to join meetings at will, without the risk of getting lost. Yes, we write short protocols in each meeting (readable on moodle) to allow sporadic visitors to catch up.

HamGroups should furthermore prevent special interest groups from breaking away and starting their own clubs, resulting in loss of knowhow, human resources and agility so

badly needed in the national association. It is part of our “inclusion” strategy. The latest addition to our range of offers is called “Health Advisor HamGroup”, addressing every ham for whom personal health is a core value of life (yes, physicians as mentors).

For extremely specialised topics, we will cooperate with other countries in order to gather enough hams and expertise to keep a HamGroup alive and flourishing.

Personal remark: It is absolutely amazing to see the vast range of expertise and knowhow there is in our ham’s world ! From every meeting, I learn interesting new things. Much more fun and entertaining than to read through all stuff on the web alone !

Everyone who misses HamGroups is not harnessing the huge potential of our ham community!

Furthermore, HamGroups can very well be used to cultivate democratic processes within our associations, including strategic discussions, concepts, allocation of funds, idea gathering, new project ideas. Like community assemblies where every community member can speak out him/herself and gains the feeling of being a valued member of the community.

(Hams are often “lone wolves” by DNA, not very interested in communication and real (not “59”/“599”) exchange with others. Such hams will always evade HamGroups).

At this moment (Feb 2022), thirty different HamGroups are active in Switzerland, with varying number of affiliates of course). See www.HamGroups.ch.

The obvious next step is described in Project Idea #6, further down.

Project Idea #5: Provide individual member radio amateurs with modern services

(HamEcosystem Structure/Platform)(Status: in operation. successful so far)

USKA/Switzerland Members have the right to register a free moderator account on our powerful Bigbluebutton (BBB) videoconference server. They are free to use this for whatever they want.

If desired, we are ready to add additional services and tools, such as live videostreaming, Nextcloud space, Miro etc for our members.

BBB proved to be an excellent choice. DARC selected the same software, independent from us. BBB was quickly accepted by our members as USKA standard, to be used also in HamWebinars, HamGroups and the coming HamProjects.

10% of our members actually possess moderator rights on our BBB server. Considering that “viewers” do not need registration, we guess that at least 20 to 30% of our members take part in BBB-“powered” online activities of all sorts.

Obviously, all (other) databases relevant to members must have a web GUI to allow members to access and update information themselves without any bureaucracy.

Project Idea #6: HamProjects – where Hams work together

(HamEcosystem Structure/Platform)(Status: in preparation)

The sheer number of ham radio project ideas is absolutely staggering! The web is full of ideas, and hams create new ideas almost every hour!

Some ham projects are easy and manageable by an individual in a few hours or a few weeks time.

Other ham projects are more complex. And – very important – quickly become multi-faceted and interdisciplinary. We often have to tap the expertise of more than only one single HamGroup’s members! Thus, we regularly will have a team instead of an individual. Team members learn from each other. Team members have different skills. Last but not

least: working in teams is a lot more fun than working isolated in the shack.

Besides: working in teams develops an important life skill / social competence.

We developed the idea of HamProjects stimulated by two sources:

First, Lisa PA2LS proposed doing ham project work within our organizations, by opening up participation to external STEM minded people and therefore publish projects well ahead of time, allowing others to participate before the project gets under way.

Second, the South Africans proposed the creation of a Technology Working Group suggesting creating and coordinating ham projects (such as HamSci.org) as one of it's tasks. Normally, Member Societies have plenty of skills in their own ranks to allow them to organize ham projects on a national basis. However, for very specialized topics, bundling of talents and specialists internationally will be required.

USKA/Switzerland is in the phase of designing our HamProject.ch platform. Projects will be coordinated in all forms (on site, online or hybrid).

We see the following functionalities of this web based structure:

- Invent, collect, create, discuss, evaluate project ideas, specify goals, requirements, define details
- Assign a project manager(s) among creators
- Publish the project on the platform, gather the team members
- Start the project, work independently on it, publish progress reports on the site from time to time
- Bring the project to an end, after some weeks or months, final report, close the project.
- Technical infrastructures used: Website HamProject.ch, BigBlueButton, Moodle, Nextcloud, OBS/Livevideostreaming and others as required.

Content, purpose or goal can be anything.

We facilitate the composition of teams, making use of the potential of our national membership. Team members from abroad will be welcome, too.

Should substantial financing be required, there are solutions: i.e. ARDC, MS, individual or corporate sponsors, further foundations, government initiatives "Digital Transformation" etc.

USKA/Switzerland plans to launch this in summer 2022. HamProjects.ch will have to be accompanied by marketing efforts to STEM audiences (SEO, social media etc).

We expect interesting projects, some of them of value to society, and we hope to motivate young STEM talents to join our ranks.
