Amateur Radio on the International Space Station (ARISS)
Educational Proposal

ARISS Europe opens educational proposal windows for applicants twice each year, intended for ARISS contacts to be scheduled 6-12 months later. You'll find information about the current or next proposal window at **http://www.ariss-eu.org/school-contacts**. You'll also find dates and information offered to address questions about the program and the proposal.

Privacy Policy:
The information you provide will be used by ARISS only for its intended purpose, namely, to evaluate your ARISS Educational Proposal. In compliance with privacy laws on the retention and the processing of personal information, the applicants give ARISS permission to use the information for the intended purpose. Not providing needed information may result in ARISS's inability to provide you with the information or services you desire. Please, fill out and sign the authorization statement (AUTHORIZATION AND USE OF PERSONAL INFORMATION included in application form) and e-mail it, duly scanned, to:
school.selection.manager@ariss-eu.org

Directions:
Please fill out this Proposal Form to the best of your ability.
Save the completed Proposal Form as a Microsoft Word document or as a PDF document with this file naming convention:

Organization, YYYY-MM-DD, ARISS Proposal

When completed, please email it and the application form to ARISS at **school.selection.manager@ariss-eu.org** during a Proposal Window.

If you have any questions or comments on this form, please email us at **school.selection.manager@ariss-eu.org**

This proposal is being submitted for the Contact Window of
July 1, 2021 – December 30, 2021

and is due to ARISS by close of business **October 30, 2020**.

Section 1: Contact Information

Educational Host Organization	Organization Name: **Technisches Bildungszentrum Mitte** Address: **An der Weserbahn 4** City, State, Zip Code: **28195 Bremen, Germany** Web site: **https://www.tbz-mitte.de**
Organization Main Point of Contact *Main POC must be authorized to represent the organization*	Name: **Jan Benje** Title/Role: **Chief of Department 'Studienvorbereitende Vollzeitbildungsgänge'** Address: **An der Weserbahn 4** City, State, Zip Code: **28195 Bremen, Germany** Work Telephone: **(...)** Mobile: **(...)** Email: **(...)**
Local Amateur Radio Point of Contact *If identified at time of proposal; this person will coordinate support being provided by local amateur radio community*	Name and Call Sign: **Daniel Wendt-Fröhlich, DL2AB** Address: **(...)** City, State, Zip Code: **(...)** Daytime Telephone: **(...)** Mobile: **(...)** Email: **(...)**
Additional Point of Contact *(optional)* *Anyone else from the educational community or ham radio community who will be involved in leading the execution of the proposed plan*	Name: **Mathias Dahlke, DJ9MD** Address: **(...)** City, State, Zip Code: **(...)** Daytime Telephone: **(...)** Mobile: **(...)** Email: **(...)**

Please tell us: How did you hear about the ARISS program?

Local Amateur-Radio-Club

Section 2: Scheduling Considerations for ARISS Contact

1. If selected, are there any dates during the proposed cycle that your organization cannot support? Note weeks, days of week, times of day that you can't support.

We can support contacts between 6 AM and 10PM on every day between Monday and Friday.
Except:

- ***17.7.-5.9.2020***
- ***27.9.-29.9.2020***
- ***16.10.-31.10.2020***
- ***23.12.-31.12.2020***

Please note that these exclusion zones will make it more difficult to get a contact scheduled for your organization.

2. Please provide any preferred time for the event to be held. If you are planning around a specific event occurring on a specific day(s) or week(s), state that clearly.
We would prefer a contact in the daytime or early evening.

Please, fill in and attach to application the School Calendar JUL DEC 2021

3. Please provide appropriate time zone. ***CET***

Note: *Due to the nature of the program, nothing can be guaranteed.*

4. At this point do you have a preference for a Direct or a Telebridge configuration for your contact?

For example, there may be known constraints at your location or constraints related to a specific event on a particular day and time that would make a Direct contact difficult and would indicate a Telebridge contact would be your best choice. If you have already determined your preference, please indicate that here. If you don't have a preference, please check the box for "either." If you don't yet know how to assess your preference without further guidance, please check the box for "unsure."

☒ **Prefer direct** ☐ Prefer telebridge ☐ Either ☐ Unsure

Note: *A direct contact is operated by a radio station (temporarily) installed in the school.*
A telebridge contact is operated by a distant radio station and signals are relayed per telephone line.

Section 3: Education Plan

For the following items, please include as much detail and information as you feel is appropriate within the prescribed word limits. Text boxes will expand as needed. We will not review information that exceeds the prescribed response limit. NOTE: Microsoft Word allows you to select a section of text and perform a Word Count using the Tools menu (version specific differences exist between Mac OS and Windows environments).

Provide information on your organization, its purpose, educational objectives and the population it serves. Include demographics of the student population of your organization, with descriptors such age level, education level and STEM (Science, Technology, Engineering and Mathematics) involvement

1a. Our school/organization is (check all that apply):

☒ **Urban** ☐ Suburban ☐ Rural

☐ School ☐ Museum ☐ Youth Organization

☐ Other organization type. (Please specify)

1 b. Describe the student population that will be engaged with your education plan and the audience that will be present for the ARISS contact event. If students from another school/organization are to be involved in your education plan and/or in the audience for the contact, include demographics of that student population. Include descriptors such as age level, education level, STEM involvement, etc. If you have previously hosted an ARISS contact, describe how you will reach a different audience with this new proposal. *Limit 250 words.*

The Technisches Bildungszentrum Mitte (TBZ Mitte), in English „Technical Centre of Education of the City Centre“, was founded in the year 2000. With a variety of different educational programs, TBZ Mitte is the most efficient school with a technical orientation in Bremen.

With the expertise of more than 100 teachers and certified master craftmen, we have a great pedagogical, professional and general education know-how. We combine vocational education and training and general education for the benefit of our students.

The age of our Students is between 14 and 22 years. The education level is between the lower secondary school qualification and the final secondary-school examinations (equivalent to the A levels). Our school is a certified school for STEM-Education (we are a ‘mint-freundliche Schule’) an every pupil has technical subjects. For example, in our vocational high school of technology every pupil has one of the subejects:

- *Information Technology*
- *Mechatronics*
- *Aerospace Engineering*
- *Technology and management*

We plan to invite the pupil of a primary school to join us on the day the event would be held. The age of this pupil is between 6 and 10 years.

1 c. Describe the purpose of your school/organization and its educational objectives/mission statement. *Limit 250 words*

As there are several quite different courses of education at our school the purpose of those different courses are very different in nature.
Our full-time three years higher education entry qualification programs have the purpose to prepare students for university and university of applied science. The part-time dual vocational education and training has the purpose to prepare students for a vocational qualification and the full-time pre-vocational training programs prepare the students for a vocational training.
Besides the academic education, our pedagogical mission includes e.g. promoting the personal sense of responsibility and the independence of learners. In this context our students are guided to self-assess their work. In addition to that we help our students develop media literacy and educate them to respect social and cultural differences. Therefore we strive for the award from the government "School without Racism, School with Courage“.

2. Explain why your organization wants to host an ARISS radio contact. Explain how an ARISS radio contact will enhance the educational objectives of your organization. Specifically, describe how your organization will use the ARISS radio contact to support local STEM goals and objectives. *Limit of 350 words.*

Our general goal is to empower our students for their future lives. We want them to become competent in their actions so that they will excel in their university studies, professional apprenticeships and professional lives. We think a good way way to fascinate them for the STEM-subjects is to work on real projects, which are relevant outside of school instead of working on simulations.
We would also like to draw the attention of other students in Bremen and the surrounding area to our educational offers. *Vocational high schools offer an educational program that, although it leads to the Abitur, which is the highest possible secondary school degree, is little known in public and in Bremen's school world.*

3. Describe any community partnerships that will be part of the ARISS radio contact and surrounding activities. **Specifically, list any local amateur radio organizations that will be supporting your contact** and/or that will be involved in your educational plan, as well as any other educational organizations or other community resources that will be involved in carrying out your educational plan. Describe how these organizations have committed to be part of or will support your educational plan. *Limit of 350 words.*

DLR School Lab Bremen with lectures and experiments.
Supporting local DARC-Clubs: Bremen(I04), Teufelsmoor(I23), Delmenhorst(I18).
Hackerspace Bremen e.V. is supporting with manpower, hardware and workshops too.

4 a. Describe your school's yearlong curricular topics with particular emphasis on STEM subjects and some of the hands-on preparatory learning activities to be engaged with students at different grade levels leading up to and following the radio contact with the ISS. *Limit of 1200 words*

The TBZ is a large vocational school center with a large number of technical apprenticeships.
In addition to our vocational school we also have a technical vocational high school, a technical college and a technical college.
The curricular aspects that should be taken up in the context of the project result from the departments and area of vocational education involved.
Involved are the following - also naming the respective project-related contents:

- *Vocational technical high school:*
  - *The advanced English class coordinates the preparation of the questions and, if necessary, their translation.*
  - *The advanced class in aerospace engineering covers the following aspects:*
    - *Orbit and mission considerations: The students look at different orbits (e.g. LEO, MEO and GEO) of the possible placement of satellites and also of the International Space Station (ISS). They calculate e.g. the orbit speed and distances from low-flying objects and should get an idea of the relationships between mass, gravity and speed depending on the distance from earth. In addition, they learn about the influences of space environment (space weather), which has a significant impact on the orbit parameters which are to be calculated. The beginnings of the ellipse calculation and the definition of the six path elements complete the basic knowledge. In this course the students will try to determine the time window for contact.*

    - *Electromagnetic waves and satellite communication: The students learn what telecommunication is and what the speed of propagation and reflection of waves in a "disturbed space" mean. In connection with this they should also learn to understand to what extent among others the time dilation of the theory of relativity have an influence on the latency period. Furthermore, the students learn about antenna and communication elements.*

    - *The ISS and working on the ISS: The pupils also get to know the ISS, its research laboratories and the internationality on the ISS. They learn to understand how to live and work on the ISS and they are shown how everyday procedures work, how eating, sleeping and the toilet work and how medical care is ensured. In connection with the orbit considerations it is also explained how to e.g. prevent a sinking of the station, and how the supply flights work.*

- *Technical school:*
  - *The technical school will build a tripod made of light metal for the antenna so that it can be positioned on the roof.*
- *Apprenticeship as electrical engineers for devices and systems:*
  - *The tracking of the antenna should be realized with the help of microcontrollers or a PLC.*
- *Apprenticeship as communication electricians:*
  - *Construction of the antenna.*
- *Apprenticeship in Event technology:*
  - *Realization of the entire event, such as stage, light, projection screen and sound with the school's own equipment.*

4. b. Describe any activities planned for the week and days leading up to and following the ARISS radio contact. *Limit of 500 words.*

After the departments and apprenticeships involved have carried out the necessary preparatory work, it is intended to involve the entire school public (2,600 students) in the project through a project week.
Schools from the neighborhood (elementary school, another academic high school) will also be invited. The actual implementation and execution of the program depends on which schools will take part in this project week.

4 c. Also, describe how you will develop the contact interview questions and how you will select the students who will ask the questions of the ISS crewmember. *Limit of 350 words.*

The questions are compiled and coordinated by the advanced English class. Some of these students also attend the advanced aerospace engineering class and are therefore not only linguistically but also thematically capable should the contact be in English.
Ideally, the students who brought up the questions should also be the ones who ask them.

5. Describe how you will organize your proposed ARISS radio contact, including the location, transportation details (if needed), and how you will have the supporting technology (audio/video/Internet) in place. *Limit of 350 words*.

We will be working in different groups for the different tasks with regular meetings, including all involved students, teachers and amateur radio operators. For the contact day we will have a detailed task list and managers for the different sites.
Antennas will be on the roof of the building, wired to the radio rooms near the roof and the ground floor. Antennas and radios will be built weeks before the contact time window, followed by stage and event technology a few days before the proposed contact day.

The event technology will be installed by students from the second grade of the apprenticeship in event technology who are educated in our German dual system at our vocational school. The system includes the whole audio and video signal flow. The speech signal will be routed through a digital mixer, including the equalization of the overall sound system response and prevention of acoustical feedback. The amplification and appropriate speaker setup will also be installed. For the interviews wireless handheld microphones and/ or headsets for those students who will ask the questions will be installed. A video projector and projection screen will be installed to allow an optimal sight for the students. All the technical setup will be provided on a stage to have a suitable framework for an exciting and professional panel discussion.

Internet with open ports (own IP) for OBS is available.

6. Provide information on your organization's plan to secure your target audience in case there is a shift in dates and/ or times (i.e. "Plan B"). *Limit of 250 words.* Consider this scenario*: Four days before the date that has been scheduled for your contact, an ISS event occurs that means the contact will not be possible at the time previously scheduled. You are offered an alternate contact time a week later. How will you adjust?*

As this happened a few years before with the same team (EU445-IGS-OHZ 2018) we will be prepared for this.
We need to inform all participating people including students, teachers, principals, media and the amateur radio operators. Storage of already built equipment is possible.

7 a. Describe your organization's plans to evaluate the impact of the ARISS radio contact on students. How will you know the event has influenced student learning and/or attitudes toward learning? *Limit of 350 words.*

We want to develop a permanent project team out of the ARISS radio contact that deals with astronomy and radio. For this purpose, a permanent radio station and an observatory will be installed at the TBZ. The radio station should be equipped so that it can use satellites. A Newtonian reflector with an opening of 114mm and a focal length of 1100mm is available for equipping the observatory.

7 b. Also, please provide the name and email address for the person(s) in your organization who will be responsible for completing the **ARISS Activity Report**, which requires information about the student and audience participation in the contact event, and who will coordinate completion of the online **ARISS Post Contact Evaluation,** which will ask for educator feedback about the ARISS experience.

ARISS Activity Report POC and email address: **Daniel Wendt-Fröhlich, DL2AB@darc.de**
ARISS Post Contact Evaluation POC + email address: **Jan Benje, Jan.Benje@schulverwaltung.bremen.de**

Section 4: Media Plan

Describe your media/promotion plan to engage your community. Be specific where possible. *Limit of 350 words*.

We are in contact with the local newspaper «Weser Kurier» and the local TV- and radio station «Radio Bremen» and «Buten un Binnen». We are planning an announcement and information about the projects of the students in the local newspaper. On the contact day the local TV- and radio stations will report about the contact.

Section 5: Sample Timeline Day of ARISS Radio Contact

Create a sample internal-use schedule that outlines the day of the ARISS radio contact for your staff members. This sample schedule would be used for your internal coordination and planning (transportation of students, audio/video/Internet setup, coordination with amateur radio team, activities, etc.) and is not intended to be the program distributed to the ARISS radio contact audience. For this sample document, assume your ARISS radio contact is scheduled from 11:15 am – 11:25 am. (Note***: Your sample schedule is intended to show that you have thought through the contact process. It is not a commitment.) Limit of 550 words.***

Min 2-3 months before: *setup internet at location with IT of school, takes a while...*
start detailed documentation of positions, teams and procedures
radio activities with students, teachers, parents and radio team
2-3 weeks before contact-window: *setup+testing of antennas, streaming, (phone bridges)*
simulate ISS-contact with students and Amateur Satellites

weekend (or 2-3 days) before: setup stations, audio/event tech, streaming, power as far a poss.
2-3 day before: *programm the radio memories – set memory 0/1 to 145.800*
remind newspaper, radio- and tv-stations
24hours before: *24 hours School Contact Confirmation to ARISS*

07:30 *Arrival, own preparations*
07:45 *meeting, briefings*
08:00 *last preparations at the different sites: Antennas, Radios, Site, Audio, Streaming*
prepare ARISS-Activity-Protocoll
09:00 *Last Tests:*
- Antenna team: Update TLEs, simulate ISS-pass with rotors and Pol-Switches
- Radio Team: test radios, sequencers and SWR. attach stickers to LCDs
- Site team: check power lines, UPS, batteries, (phone line)
- Audio Team: test Audio to/from mikes, radios, speakers, stream, (phone)
- Student Team: ARISS-Questions, Audio-leveling, preparations
- Streaming Team: Check OBS-Setup, Audio, Network on a different YT-URL
- Camera Team: start with interviews and recordings
09:45 *Last complete rehearsal with students and all sites, finalising audio leveling*
10:15 *Open Hall to public*
Start streaming and event with some introduction videos, music etc.
All handhelds to 433.550 (and last preparing call to telebridge-school)
10:30 *Begin stage program:*
Speeches of Principal, teachers etc. mixed with
School band, Science Slam, Theater group, Short movie, etc...
11:00 *Begin ISS-Contact:*
final setup of radios and rotors
silence at 433.550
(establish Telebridge, 2nd line to orga of partner school)
Students get in line for ISS-Questions
11:05 *short introduction of the students and radio team*
hints and information about contact.
11:10 *Student beginns callig the ISS every 20s*
11:15 *Questions of the students to Matthias Maurer*
11:25 *Closing, maybe some words from the pricipal/teachers etc.*
11:30 *Backup all data and recordings (twice!)*
12:00 *Meeting of all teams, students, teachers, principal at the antenna, photos etc.*
12:30 *Dissassembly of all sites*
16:00 *finalise ARISS-Activity-Protocol, save all recordings*

1 day after contact *send Photos, mp3s and Activity Report to ARISS*
1-3 weeks after contact *Release documentations, selected photos and edited video*

ARISS EUROPE

Amateur Radio on the International Space Station

AUTHORIZATION AND USE OF PERSONAL INFORMATION

In compliance with privacy laws on the detention and the processing of personal information, the applicants shall complete and sign the present authorization statement and e-mail it, duly scanned, to the ARISS School Selection Manager.

School's Name and City : **Technisches Bildungszentrum Mitte (TBZ Mitte)**

Principal Name : **OStD Jörg Metag**

The undersigned, duly authorized to represent the school (or youth organization), gives permission to the ARISS organization for the processing and use of data related to and needed for the setting up of an educative ARISS radio contact, provided care be taken that the data will not be made available to other parties, accordingly to the applicable law.

Moreover, the undersigned gives permission to the ARISS organization for publishing the school's ARISS related educational project on the ARISS website, provided no personal data be made available, except the school's address, e-mail and phone number.

Date : Name and Signature :

Participants

Accordingly to the applicable law, the undersigned give permission to the ARISS organization for the processing and use of their personal data related to and needed for the setting up of an educative ARISS radio contact, provided care be taken that the data will not be made available to other parties.

Coordinating Teacher Name: Jan Benje

Date : Signature :

Public Relations Contact Person Name: Claudia Specketer

Date : Signature :

Amateur Radio Operator Name: Daniel Wendt-Fröhlich, DL2AB

Date : Signature :

This authorization form, completed, scanned, shall be e-mailed to:
school.selection.manager@ariss-eu.org

Amateur Radio on the International Space Station (ARISS)

School Application Form
For an Organized Radio Contact with the International Space Station

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Please read instructions before filling out the application.

SECTION A

ALL QUESTIONS IN THIS SECTION MUST BE ANSWERED.

For a direct contact, fill out questions A1 to A15 and B1 to B7. For a telebridge contact, fill out questions A1 to A15.

Note: Please enter your country code and city code as part of the telephone number for any voice, fax, or cellular phone.

(A1.) Date of application: **27.10.2020**

(A2.) School
Name: **Technisches Bildungszentrum Mitte (TBZ Mitte)**
Address: **An der Weserbahn 4**
City: **Bremen**
State, province, territory, mail district: **Bremen**
Zip or postal code: **28199**
Country: **Germany**
Phone #: **+49-421-361 16770**
Fax #: **+49-421-361 3077**
E-mail address: **369@schulverwaltung.bremen.de**
School Web site address: **https://www.tbz-mitte.de**

Normal school hours: **8-15:00 CET**
Brief description of the school and the amateur radio school club (if there is one):
The TBZ is a large vocational school center with a large number of technical apprenticeships. In addition to our vocational school we also have a technical vocational high school, a technical college and a technical college.

(A3.) Principal
Name: **Jörg Metag**
School phone #: **(...)**
School fax #: **(...)**
School e-mail address: **(...)**
Pager #:
Home phone #
Home fax #:
Cellular phone #:
Home e-mail address:
Home address: **(...)**
Home city: **(...)**

Home state, province, territory, mail district: **(...)**
Home zip or postal code: **(...)**
Home country: **(...)**

(A4.) Coordinating teacher
Name: **Jan Benje**
Grade level/subject taught: **Oberstufe, Mathematics and Computer Science**
School phone #: **(...)**
School fax #: **(...)**
School e-mail address: **(...)**
Pager #:
Home phone #: **(...)**
Home fax #:
Cellular phone #: **(...)**
Home e-mail address:
Home address: **(...)**
Home city: **(...)**
Home state, province, territory, mail district: **(...)**
Home zip or postal code: **(...)**
Home country: **(...)**

(A5.) Public relations contact
Name: **Claudia Specketer**
Work phone #: **(...)**
Work fax #: **(...)**
Work e-mail address: **(...)**
Pager #:
Home phone #:
Home fax #:
Cellular phone #:
Home e-mail address:
Home address: **(...)**
Home city: **(...)**
Home state, province, territory, mail district:
Home zip or postal code: **(...)**
Home country: **(...)**

(A6.) Has the school previously been selected for a shuttle, Mir, or ISS contact? (YES or NO): **No**
If YES, which mission?
STS: or Astronaut on Mir or ISS:
Date of contact:

Did the school have a complete contact? If no, please explain why not.

(A7.) Language requested: English is the language that is normally used on the ISS. It is possible that other languages may be used. If another language is requested, please indicate the desired language.
Prefered German, but english is possible too
(A8.) Are weekends, holidays or nights a problem for your contact? (YES/NO) **YES**

Please forward the school calendar for the year. To aid the contact planners, provide dates for major holidays, or other known problem dates. Be as descriptive as possible. (i.e. school starts the third week of August, holiday is the fourth Thursday of the month, etc.)

We can support contacts between 6 PM and 10PM an every day between Monday and Friday.
Except:

- ***17.7.-5.9.2020***
- ***27.9.-29.9.2020***
- ***16.10.-31.10.2020***
- ***23.12.-31.12.2020***

(A9.) Attach the school's educational proposal to this application before submitting.

The educational proposal should include answers to these questions:
How will you:
a) integrate this activity into the school curriculum?
b) involve as many grade levels as you can, with participation through essay contests, planning a Mars outpost, learning to track the ISS, learning about basic circuit boards, poster drawing, letter writing, etc.?
c) obtain as much media coverage as possible?

(A10.) Contact site phone #: **(...)**

(A11.) Contact site cellular phone #: **(...)**

(A12.) Contact site fax #: **(...)**

(A13.). Contact site time zone:
When does your area go to Daylight Saving Time? **28/03/2021 (UTC+2) – 25/10/2021 (UTC+1)**
(A14.) Hours before or after UTC (Coordinated Universal Time): **UTC+1h (CET)**
(A15.) Assisting local amateur radio club
(To be filled out by the amateur radio club if one is providing assistance)
Name of amateur radio club: **DARC-Funktreff im Hackerspace Bremen – https://funkfreun.de**
Club contact person: **Daniel Wendt-Fröhlich**
Contact person's call sign: **DL2AB**
Contact person's home phone #: **(...)**
Contact person's work phone #: **(...)**
Contact person's pager #:
Contact person's e-mail address: **DL2AB@darc.de**
Is the club experienced with satellite operations? (YES or NO): **yes + ARISS EU445 (IGS-OHZ)**
National amateur radio organization (if club is affiliated with a national amateur radio organization such as the ARRL): **Deutscher Amateur-Radio-Club e.V. (DARC)**

SECTION B

ONLY ANSWER THESE QUESTIONS BELOW IF A DIRECT CONTACT BETWEEN THE SCHOOL AND ISS IS REQUESTED

If you are unsure how to answer a question, please ask your ARISS representative for help.

(B1.) Radio contact coordinator
(To be filled out by an amateur radio operator)
Name: **Daniel Wendt-Fröhlich**
Call sign: **DL2AB**
Home address: **(...)**
Home city: **Bremen**
Home state, province, territory, mail district: **Bremen**
Home zip or postal code: **(...)**
Home country: **Germany**
Home phone #: **(...)**
Pager #:
Cellular phone #: **(...)**
Home fax #:
Home e-mail address: **dl2ab@darc.de**
Work phone #:
Work fax #:
Work e-mail address:
Experienced with satellite operations? (YES or NO): **yes**

DATA ABOUT SITE OF RADIO CONTACT

(B2). Site of radio contact location information:
Latitude [Use decimal format] (Indicate N=North S=South): **53.084600 N**
Longitude [Use decimal format] (Indicate W=West E=East): **8.797658 E**
Elevation [Use meters above mean sea level] **9m Ground + 20m Building + 6m Mast**
Address: **An der Weserbahn 4**
City: **D-28195 Bremen**
State, province, territory, mail district: **Bremen**
Country: **Germany**

(B3.) Radio coordinator during contact:
Name: **Daniel Wendt-Fröhlich**
Call sign: **DL2AB**
Home address: **(...)**
Home city: **Bremen**
Home state, province, territory, mail district: **Bremen**
Home zip or postal code: **28199**
Home country: **Germany**
Home phone #: **(...)**
Pager #:
Cellular phone #: **(...)**
Home fax #:
Home e-mail address: **dl2ab@darc.de**

Work phone #: → cellular Phone
Work fax #:
Work e-mail address: → Home e-mail adress
Experienced with satellite operations? (YES or NO): **yes**

(B4.) Call sign at contact site: **DN3HB**

(B5.) Station and equipment data
(To be used during the ARISS amateur radio contact)
We require 2 complete radio stations at your event site. See: ARISS Contact Requirements.

Radio Station #1 **(with UPS incl. audio mixer)**
Transceiver to be used (manufacturer/model): **Yaesu-FT897 (Fundraising ICOM IC-9700)**
Does it have memories? (YES or NO): **YES** If yes, number of memories: **200**
If yes, is the memory considered tunable like a VFO? **yes**
Output Power (Watts): **50 W for 2m**
Frequency range (MHz): **1.8 – 440 MHz**
Frequency steps: **100 Hz**
Station equipped with an RX preamplifier? (YES or NO): **yes**
If YES, manufacturer and model of Preamplifier: **SSB SP-200 + Sequencer**
Station equipped with a TX amplifier? (YES or NO): **yes**
If YES, manufacturer and model of amplifier: **GAGA V-120**
If YES, maximum output power of TX amplifier (Watts): **120Watt**
Is the radio capable of a non-standard split? (YES or NO): **yes**
Antenna type (VERTICAL, SATELLITE (AZ/EL?), OTHER) [specify]: **Satellite with Az/El-Rotor on 6m-Mast**
If commercially built, manufacturer and model: **2x Flexa FX-217**
Antenna gain (dbd or dbi): **11 dBd**
Number of elements: **2x 9 Elements**
Polarization (HORIZONTAL, CIRCULAR, or VERTICAL) **Switches for CIRCULAR (left- and right-handed), VERTICAL and HORIZONTAL**
Antenna equipped with a rotator? (NONE, AZIMUTH ONLY, or AZ/EL): **Az/El**
Satellite tracking program available? (YES or NO): **Yes**
If YES, name of tracking program: **orbitron and gpredict**
Do you have Automatic Antenna Control? (YES or NO): **yes**
VHF Packet capability? (YES or NO): **yes, Audiointerface and Direwolf**
VHF SSTV capability? (YES or NO): **yes, with Audiointerface**
Do you have phone patch capabilities?: **yes, with phone adapters and via mixer**
SWR/Power output meter to be used (manufacturer/model): **Maas RX-20**
Coax cable to be used: **Aircell-7**

Radio Station #2 **(all battery powered, no complexity)**
Transceiver to be used (make/model): **ICOM IC-910H**
Does it have memories? (YES or NO): **YES** If yes, number of memories: **10 for Satellite**
If yes, is the memory considered tunable like a VFO **YES**
Output Power (Watts): **100 W for 2m**
Frequency range (MHz): **140-440 MHz**
Frequency steps: **100 Hz**
Station equipped with an RX preamplifier? (YES or NO): **YES**
If YES, manufacturer and model of preamplifier: **SSB SP-200 (VOX)**
Station equipped with a TX amplifier? (YES or NO): **NO**
If YES, maximum output power of TX amplifier (Watts): **-**

Is the radio capable of a non-standard split? (YES or NO): **YES**
Antenna type (VERTICAL, SATELLITE (AZ/EL?), OTHER) [specify]: **SATELLITE**
If commercially built, manufacturer and model:
Antenna gain (dbd or dbi): **9,29 dBd**
Number of elements: **2x 5 elements**
Polarization (HORIZONTAL, CIRCULAR, or VERTICAL): **CIRCULAR(LH), VERTICAL**
Antenna equipped with a rotator? (NONE, AZIMUTH ONLY, or AZ/EL): **AZ/EL**
Satellite tracking program available? (YES or NO): **YES**
If YES, name of tracking program: **GPREDICT**
Do you have Automatic Antenna Control? (YES or NO): **YES (manual operation possible)**
VHF Packet capability? (YES or NO): **yes, Audiointerface and Direwolf**
VHF SSTV capability? (YES or NO): **yes, Audiointerface**
Do you have phone patch capabilities? **In combination with Station #1**
SWR/Power output meter to be used (manufacturer/model): **Transceiver**
Coax cable to be used: **Aircell-10**

(B6.). Please note any antenna obscuration data for the site of the radio contact:

Azimuth degrees	Elevation degrees
0 to 10 (N)	**5**
10 to 70	**0**
70 to 80 (E)	**5-10 (single building in ~500m)**
80 to 220 (S)	**0-5 (some buildings in 2-3km)**
240 to 260	**5-10 (two buildings in 1-2km)**
260 to 270 (W)	**0-5**
270 to 0	**0**

(detailed 3D-Map for this area available at https://goo.gl/maps/VFTZoEgwyuFqF5TbA)

(B7.) Do you plan to do a live re-transmission or webcast? If a live re-transmission, how and on what frequency and mode? If a webcast, what is the Web site address?
Yes, Live-Streaming via YouTube (URL via funkfreun.de) **and own camerateam for recording.**