Presentation of the project

Wayne presented the basic information about the timetable for the BRUIT-FM project:
- Start date 1 February 2022, datasets should be validated and online by October 2022 (although some will be available sooner as they are already in FDSN-compatible data centers)
- First actions to take
    - Hire WP2/5 engineer and choose datasets
    - Start Masters internship (IPGP) on global noise
    - Start measurements/development of rotational seismometer within BBOBS sphere
    - Make ship requests for BBOBS/rotational deployment/s
        - January 2022 for a 2023 coastal test
        - Sept 2022 for a 2024 deep-ocean measurement
- Meetings
    - Planned for every 6 months in person, should have more frequent for inter-workgroup/task as needed

Wayne gave a short presentation on the BRUIT-FM timeline via GANTT and resource timelines, which can help to identify task loading for the temporary positions

Stephan: At IREMER, summer is the best period for starting postdocs, will probably hire WP4 postdoc in summer 2022.
Guilhem: now in Grenoble, need to figure out how to handle the engineer hired for WP5: hired by IPGP but working in Grenoble? Or transfer of funds to Grenoble?
Eleonore: MIMOSA had one in-person meeting/year and many more WP/task meetings
Wayne: Maybe we can start with a kickoff meeting in February 2022, a "kickoff 2" in September/October, once the data are all online, and then we will see from there what periodicity to use for the big meetings.

Presentation of members

Stephan Ker:
- Marine geosciences research unit of ifremer wants to be more involved in seismology
    - Acquisition of BB seismometers (ERC Focus)
    - Pool of SP instruments
    - Involvement in MARMOR project
    - Monitoring of Mayotte crisis with IPGP and BRGM
- Personnel interests
    - Marine sediment characterization by active and passive seismic methods
    - …
- Contribution
    - Co-leader of WP4

- o Organization of coastal test of rotational seismometer in bay of Brest
- o Work with Laurent Duval (IFPEN) on signal processing (w/postdoc)
- o Close collaboration with partners and many interactions w/in WP4 but also WP3 and 5

Frederic Guattari

- Intro to iXblue
  - o Global leader in design and manufacturing of innovative solutions. Most navigation and autonomy, positioning and underwater imaging
  - o Civil, defense and exploration markets
- blueSeis-1C
  - o target performance in temperatures -40 to +60°C
  - o self-noise 5 nrads/s/VHz (currently 20?)
  - o Scale factor residue M 100 ppm after thermal modeling
  - o DSP flat from 50Hz to 1000s
  - o Mag sensitivity M 300 nrads/s/Gauss
  - o 40 cm diameter, 3 kg weight, fiber length >= 10 km
  - o Stackable coils: Try to integrate 2 coils into a sphere.

David Vincentelli

- Have a fleet of ships in Mediterranean. + 1000 m^2 workshop to prepare equipment, 15 years' experience of providing mooring experience. 2000m de fond a 1h de navigation
- Fleet
  - o GGIX – Catamaran – 15m, 2-3 OBS stations for deployment and recovery, can carry surface hydrophone
    - ▪ Port La Ciotat, 22kts speed, up to 15 clients,
    - ▪ Can accompany system to seabed and deploy it remotely
    - ▪ Where would you like the station to be deployed?
  - o iXL – Pilotine – 15m
  - o ixS, zodiac and barge de traval
  - o DriX (drone marin, survey hydrographique et geophysique)

Set up meeting ixBlue, Stephan, Romauad for integration and deployments

Jean-Paul Montagner

Involved years ago in the development of ocea nbottom broadband seismometers and co-director of current thesis with Eleonore and Wayne on seafloor noise. Wayne will add him to mailing list.

Jerome Mars (& Olivier Michel)

- GIPSA-LAB involved in WPs 3 and 4 (around signal processing/noise separation) t3.2-3.2 and T4.2-4.3.
- Drives applied and theoretical research on Signals and systems lab, 4 depts, 12 teams
- Sci goals: develop advanced image and signal models, design efficient algorithms and methods for multimodality aspects of signal processing, validate these models through real applications
- Interests in BRUIT-FM

- o Exploit diversities : time samples, multiple sensors, translational diversities or velocity, polarization.
  - New techniques using tensor decomposition
- o AI based approach
  - Ability to cope with massive records, high dimensional data
  - Recurrent neural networks (NN) to cope with time dependencies
  - Variational Bayesian approach
  - Inference in the latent space
- Keywords: source separation, time-frequency methods, time-scale, physics and understandable IA.
- Mars has worked with Eleonore, Duval.

Martin Schimmel

- Geosciences Barcelona - CSIC spain
- Observational seismology, currently working on
  - o Seismic interferometry
  - o Constraining seismic fine structure by detection and identification o new signals
  - o Interested in understanding new data, methods, phenomena…
- Designed different independent data-adaptive signal proc tols
- Interested in WP3, 4, 5
- Propose to start in WP4: transfer function between ground deformation and pressure fluctuations
  - o For denoising and for seafloor compliance studies, find new hidden signals
  - o Strategy: (1) More critical data window selectin based on improved attributes. (2) Improving the "conventional" transfer function
  - o Example from Mars: selecting windows based on relative RMS variability
  - o Example from Earth: select windows based on bounds of maximum amplitude w.r.t. RMS

Frederic Guattari: surprised that you didn't use skewness as a selection parameter, looks similar to what you do.

Martin: Didn't look at skewness, could have thought about it, used RMS variability because don't want to punish noise that has large amplitudes. Could compare results, might end up similar.

Richard Dreo

- Visiting sci at NATO sea-array(?)
- Specialized in marine acoustics using vector sensors, tracking ships or marine mammals using hydrophones or OBS
- Working with Guilhem for tracking using OBS.

Collaborative software/platforms

Wayne presented his main reasons for wanting a Collaborative/ Project Management platform: to share files and information in a centralized site. Important that every one has easy and intuitive access to information and files, other possible features are:

- Document versioning and co-editing
- Private areas for sensitive information
- Sub-mailing lists to allow communication by WP or task
- Videoconferencing and instant messaging?
- More advanced stuff (probably not useful to all, should not distract):
  - Shared calendar
  - GANTT charts
  - Issue/task tracking

Wayne looked at 3 free/cheap solutions: osf.io (current host of BRUIT-FM material), Redmine and RESENA.

Osf.io is the simplest, only offers file sharing/versioning and a wiki, but the wiki doesn't seem adequate for making an easily navigable home page and subpages.

REDMINE offers file sharing/versioning and a better wiki system that could make easily navigable home page and subpages. It also offers more advanced tools such as GANTT, but needs to be set up on a machine hosted by the institution, and would take some work to set up as a easy-to-navigate solution.

RESENA is a collaborative platform for work groups for French government employees (and their collaborators). It seems to have a lot of useful features, is setup online and doesn't cost much (free in 2022, about 100€/year thereafter). Wayne requested a sign-in so that he can look at it, but hasn't seen it yet.

No-one else has extensive experience with these or other tools. Guilhem, Eleonore and Richard have used Slack, which seems very convenient for sharing and discussion but has no versioning. Guilhem commented that the software/site needs to be easy to use or no-one will use it.

WP2/5 engineer

After the meeting, Guiilhem and Wayne discussed options for hiring the WP2/5 engineer. Wayne will discuss with IPGP's contracts expert (F Metzelard) about which solution (hiring at IPGP but working in Grenoble, or transferring the salary to Grenoble) is more feasible. We need to define the post and advertise it by the end of 2021 if we want to have someone start in February 2022.