

ASSEMBLE



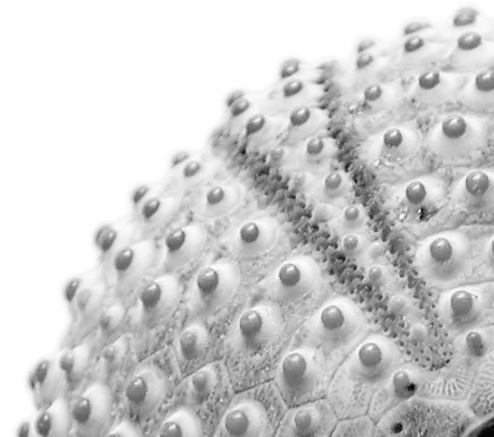
ASSOCIATION OF EUROPEAN MARINE BIOLOGICAL LABORATORIES EXPANDED

JRA 4

Development and standardization of
on-site instrumentation for
experimental marine biology and
ecology

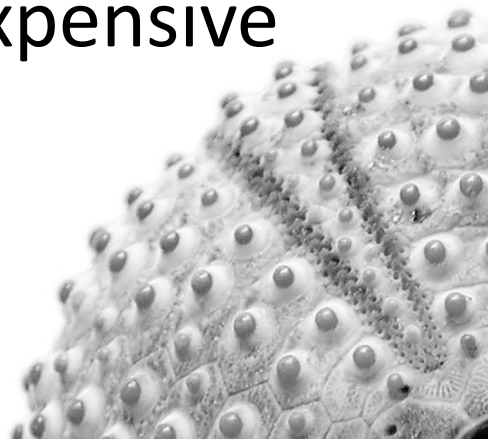
Co-coordinators: Ian Probert (SU)
& Sam Dupont (UGOT)

ASSEMBLE+ GA, Galway 11/10/2018



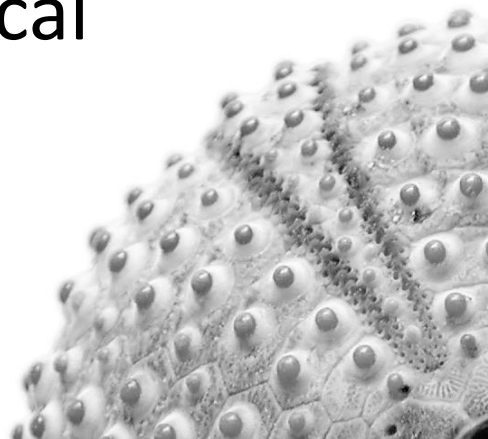
Rationale

- Provision of access to marine biological resources and on-site facilities to conduct experiments on them are emblematic services of EMBRC
- Experimental systems are most often developed from scratch by research teams and abandoned after project
- This approach is time-consuming, expensive and inefficient



Objective

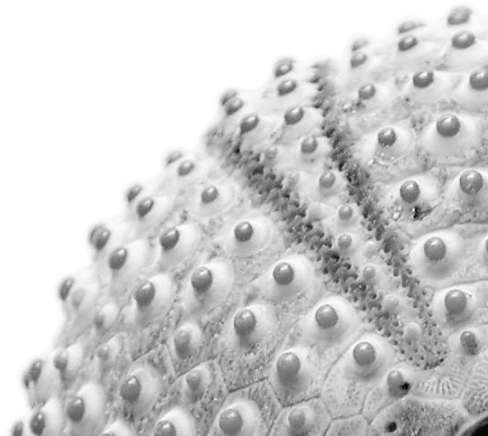
- To produce a set of detailed technical specifications and guidelines (with cost estimates) to facilitate future cross-consortium implementation of standardized experimental systems and associated infrastructure for the culture of marine organisms for biological and ecological research.



12 Funded Partners

Co-coordinators : SU (I. Probert) / UGOT (S. Dupont)

- SU -SBR : I.Probert
- SU -OOB : JF Ghiglione / FY Bouget
- SU -OOV : R. Lasbleiz
- UGOT : S. Dupont
- NUIG : G. McCormack
- VLIZ : U. Braeckman / C. Van Colen
- UPV/EHU : A. Villanueva
- CCMAR : J. Silva / P. Gavaia / R. Santos
- SZN : G. Procaccini
- UH : J. Norkko
- IUI : M. Fine
- MBA : N. Mieszkowska

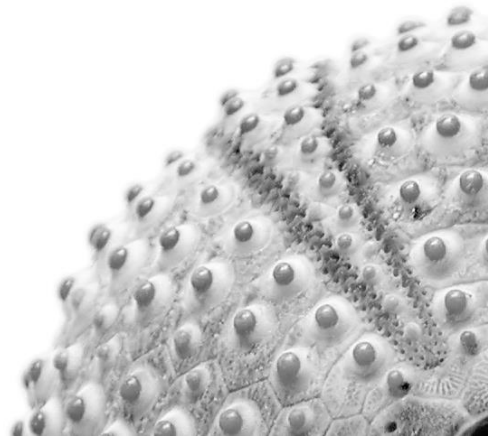


Task 4.1

Collaborative R&D to improve and harmonize design of selected categories of experimental systems

Task 4.2

Establishment of detailed technical design specifications (with cost estimations) for experimental systems and associated infrastructure



JRA4 kick-off workshop
Kristineberg Marine Station
10-12 January 2018



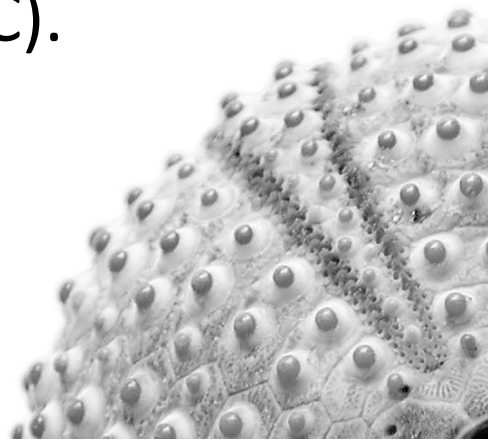


Task 4.1

Collaborative R&D to improve and harmonize design of selected categories of experimental systems

Principles :

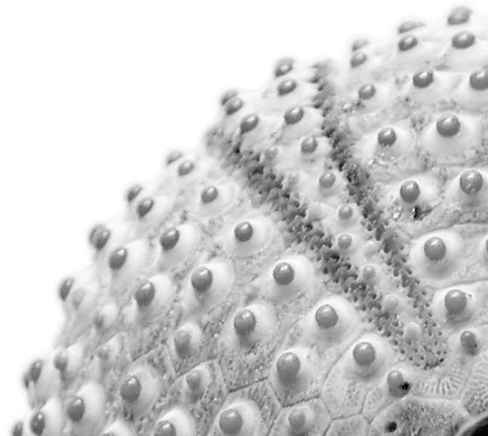
- First 24 months of project
- No funding for equipment
- Full on-site access to all experimental facilities developed in this task (and to expertise for operating them) will be offered to external researchers via ASSEMBLE Plus (and where relevant EMBRC).



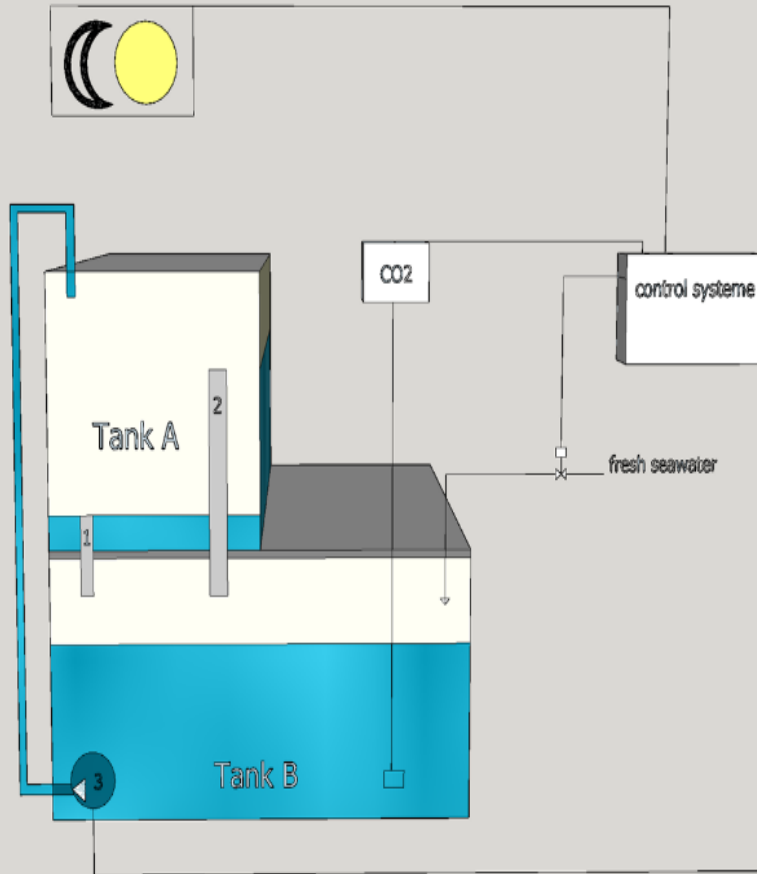
Task 4.1

Collaborative R&D to improve and harmonize design of selected categories of experimental systems

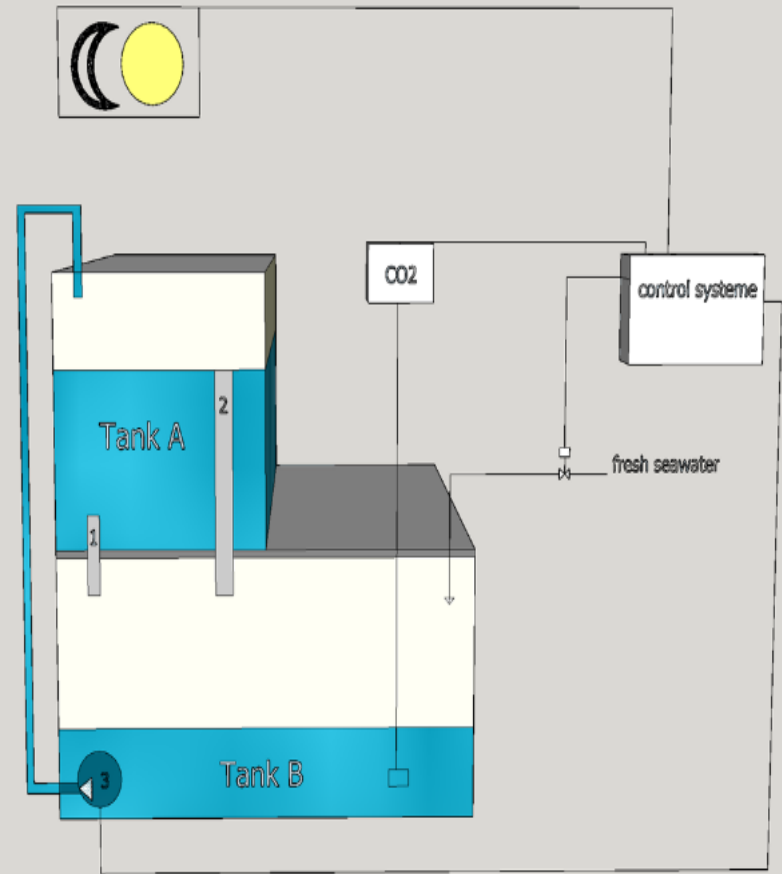
- Presentation of mini R&D projects
- Designation of working groups for 7 “technical challenges”:
 - tide simulation
 - CO₂ control
 - pH control
 - LEDs
 - multiplex systems
 - flow chambers
 - turbulence



SU SBR: tide simulator



Low tide



High tide

SU SBR: tide simulator



Low tide

Prototype v1

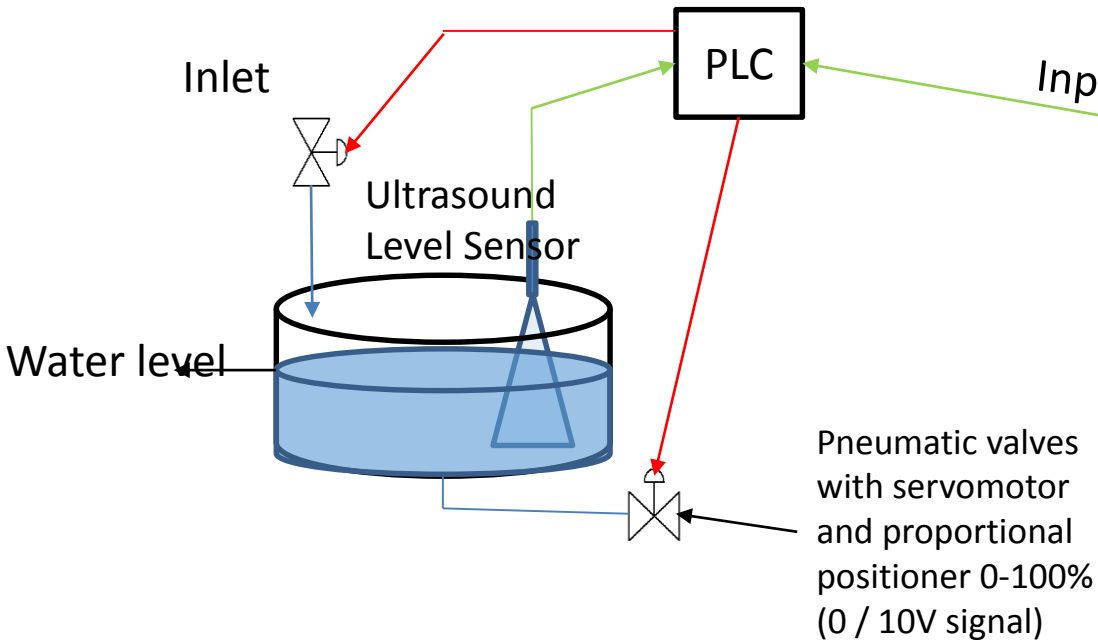


High tide

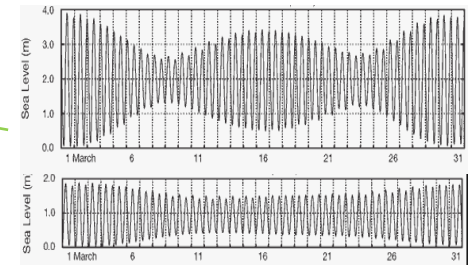
SU SBR: tide simulator

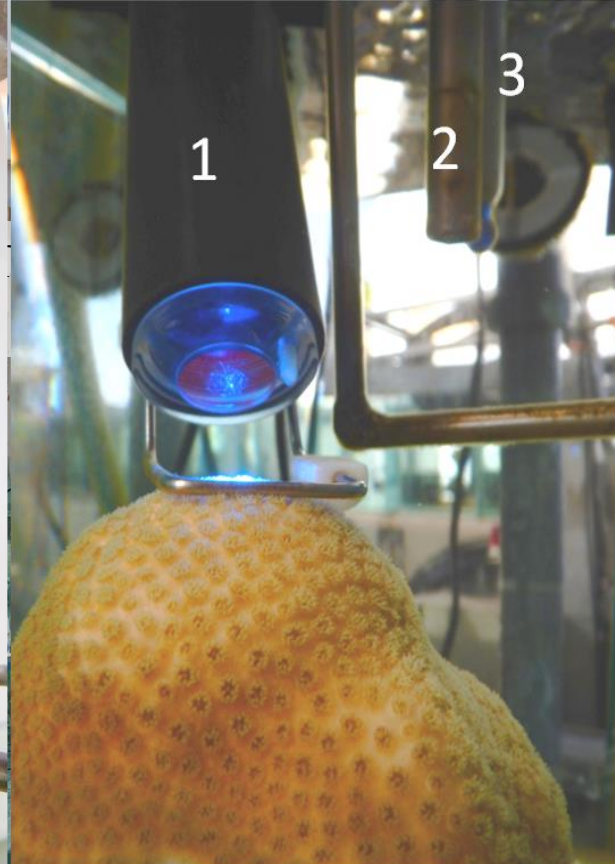


ECIMAT: tide simulator



Individual Tidal Curves





Experimental tanks

HUJI: The Red Sea Simulator

OOB Banyuls SU: Microplate light/temperature simulator V2



V1 : Growth and automated recording of luminescence under controlled conditions of light wavelength (red, blue green)

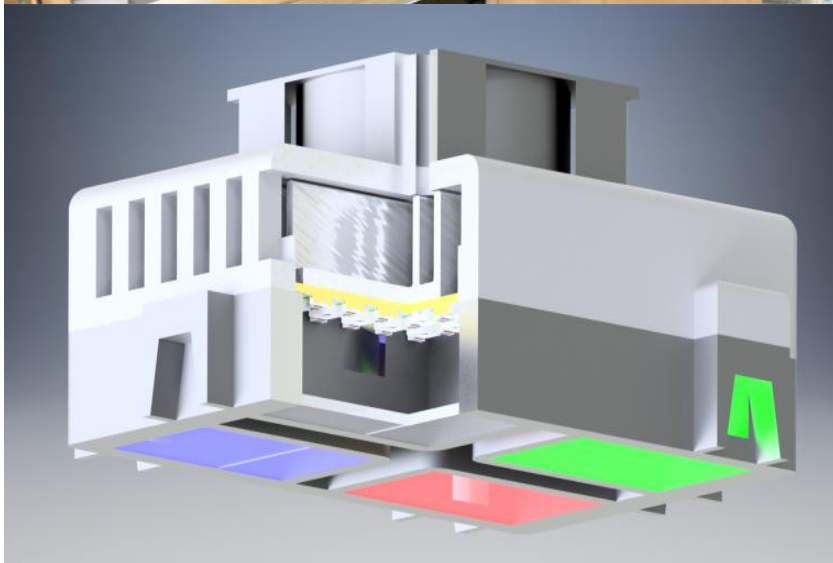
Functional, but :

- low light intensities
- room temperature only
- only discrete LEDs spectra
- Mechanical bugs...

=> V2 needed !

-V2 conception

- Wide range of light intensities (1 to 1000 microE)
- Homogeneous light from well to well
- 4 LEDs covering the whole spectrum (white, blue, red, green)
- Simulation of realistic sunlight conditions
- Temperature control (6 plates)
- Cheap and open source robot



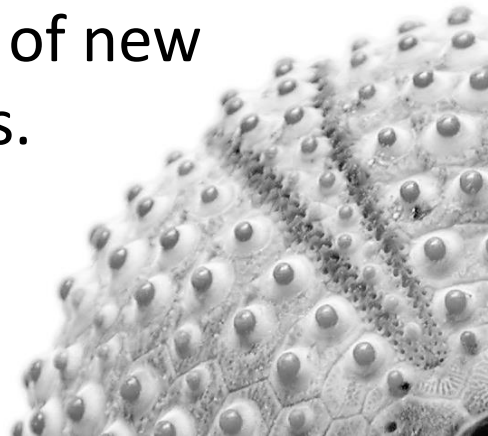
NUIG Galway



Task 4.2

Establishment of detailed technical design specifications (with cost estimations) for experimental systems and associated infrastructure

- Inventory of technical plans of existing experimental systems and associated infrastructure (seawater pumping / filtration)
- Catalogue of detailed design specifications for different categories of system including analysis of minimum technological requirements for harmonization of systems and best practise guidelines for future design of new facilities and/or upgrading of existing facilities.



RESEARCH AQUARIUM INFRASTRUCTURE

DEVELOPMENT OF INSTRUMENTATION

The Research Aquarium Infrastructure (RAI) database contains detailed information on the **technical specifications of aquarium facilities** at ASSEMBLE+ JRA4 partner marine stations. The long-term objective is to facilitate cross-consortium implementation of standardized infrastructure and experimental systems for the **culture of marine organisms for biological and ecological research**. Research aquarium infrastructure involves the following processes: seawater intake, primary treatment, secondary treatment, distribution, experimental facilities, waste water treatment. Basic components of these processes include equipment such as pumps, filters, tanks, temperature control systems, chemical control systems, degassing columns, sterilization systems, gas distribution systems, automats, etc.. A fact sheet is available for each component in the database providing images and detailed information on make/model, supplier, specifications, maintenance requirements and general comments.

QUICK SEARCH

Process Category Location



badu pump 33
Primary treatment
Pumps
Roscoff Biological Station



Component A
Seawater intake
Pumps
Roscoff Biological Station



Component B
Primary treatment
Filtration systems
Banyuls Marine Station



Component C
Experimental system
Automat
Kristineberg Marine Station



Component D
Waste water treatment
Chemical control systems
Naples Zoological Station



Component E
Secondary treatment
Degassing column
ECIMAT Vigo Marine Station



Component F
Primary treatment
Sterilization systems
Ghent University

MANAGEMENT



ASSEMBLE Plus integrates over 30 marine biological stations and installations from various regions of the world's oceans and seas; providing scientists from academia, industry and policy with the services of these marine stations. Prospective users can apply for funding to use these **ASSEMBLE Plus** facilities to carry out [Transnational Access](#) research projects.

Database format

Component: piece of equipment

For each component:

- Range of **technical information**

Location: marine station

Process: seawater intake, primary treatment, distribution, experimental system, wastewater treatment

Category: pumps, filtration systems, tanks, pipes/taps, temperature control systems, chemical control systems, gas generation/distribution systems, degassing systems, sterilization systems, automat

CREATE COMPONENT

Name*

General information

Specific information

Numbers

Remarks

Files

Location

- None -



Process*

- Select a value -



Subprocess

- None -



Category*

- Select a value -



Supplier

- None -



Model

Cost

€

Date acquired

mm / dd / yyyy

Rating



✓ Save

CREATE COMPONENT

Name*

General information

Specific information

Numbers

Remarks

Files

Material

- None -

Flow rate

Pressure

Power

 kW

Alimentation

 V/Hz

CREATE COMPONENT

Name*

General information

Specific information

Numbers

Remarks

Files

Length

 mm

Width

 mm

Depth

 mm

Height

 mm

Weight

 g

✓ Save

CREATE COMPONENT

Name*

General information










Specific information


Numbers

Remarks

Files



Maintenance requirements

B *I*        Format  Source 

Basic HTML 

[About text formats](#)










Guarantee

B *I*        Format  Source 

Basic HTML 

[About text formats](#)

General comments

B *I*        Format  Source 

Basic HTML 

[About text formats](#)

 Save

CREATE COMPONENT

Name*

General information

Specific information

Numbers

Remarks

Files

Image(s)

Add a new file



Browse...

No files selected.

[Upload requirements](#)

Documentation

Add a new file

Browse...

No files selected.

[Upload requirements](#)

✓ Save

BADU PUMP 33

Manage

Ian Probert



Content



People

BADU PUMP 33

Submitted by [Ian Probert](#) on Wednesday, October 10, 2018 - 12:19.

Last modified: Wednesday, October 10, 2018 - 12:19

Location: [Roscoff Biological Station](#)

Process: [Primary treatment](#)

Category: [Pumps](#)

Model: Badu 90/30

Date acquired: 2018-10-10

Cost: 1500€

Weight: 15g

Material: PVC

Flow rate: 30.00

Power: 1.50kW

Alimentation: 400.00V/Hz

Rating: 7



Maintenance requirements

ljbnlj

Guarantee

3 years





General comments

ljblj

PRINT

COMPONENT ADVANCED SEARCH

Component Process Category
Location Supplier

	Title	Process	Category	Location	Authored by	Rating
	badu pump 33	Primary treatment	Pumps	Roscoff Biological Station	Ian Probert	7
	Component A	Seawater intake	Pumps	Roscoff Biological Station	scrol	8
	Component B	Primary treatment	Filtration systems	Banyuls Marine Station	scrol	5
	Component C	Experimental system	Automat	Kristineberg Marine Station	scrol	9

Task 4.2

Establishment of detailed technical design specifications (with cost estimations) for experimental systems and associated infrastructure

Information gathering :

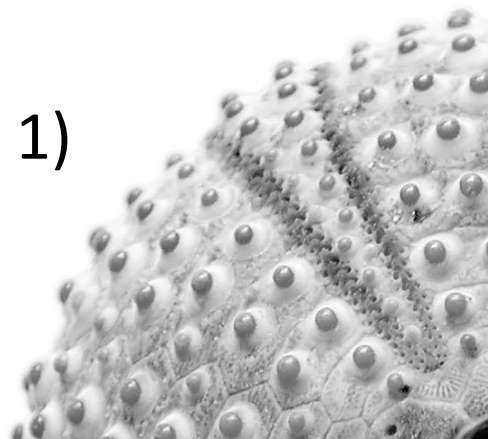
- beta-testing / modification of interface until 12/2018
- 1/2019 to 6/2019: input from all WP partners
- **open to other ASSEMBLE+ / external partners**

Analysis and recommendations :

- internal working groups
- external consultancy?

Best practice and technical design manual :

- First draft : workshop M24 (input from task 1)
- validated version M36 (= Deliverable 4.1)
- regular update in context of EMBRC



JRA4 networking (Kristineberg sauna, Jan 2018)

