What can be done (on a short timescale) at the ARCA site to improve absolute positioning?

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- FUGRO has provided the “typical” support for underwater installation. A map with positions was given to FUGRO, and they install objects as best as they can. Then, a measurement of position is provided.

- The reported measurements are affected by uncertainties in the absolute positioning, due to the fact they use the USBL system.

- We asked to prepare a proposal to reach O(1m) in the error of the absolute positioning.

- Re-measure the position of all DUs on the “edge” of the current layout + new DUs + TABs + CTF-2, RP01, etc...

- Using the bathymetric data from precedent campaigns (I have to scrutinise our data with the help of Salvo/Giorgio), it is possible to reduce further the degree of freedom of the system. This piece of information is NEVER used in the current data provided by FUGRO (!).
As discussed last week, the basic idea behind getting you the best possible positional accuracy results is to utilize the very best auxiliary sensors we can provide (GPS, Motion, Heading, USBL). **Install an LBL array** around the KM3Net field (minimum of 5 transponders but the array design would be tailored to the bathymetry and field expansion plans). We would box-in all LBL transponder frames in the array which consists of collecting USBL observations from 6 positions (4 standoff locations and 2 over the top locations) as seen in the below diagram. Once the LBL array has been installed, absolute positions recorded via box-in, depths collected, LBL array computations performed we believe we can provide an **absolute position accuracy of ~1-2m**. Below is a rough time line for array installation. Be mindful that once the array has been installed, any time you come back all you need to do is repopulate the transponders in the frames and perform a baseline check. Baseline check maybe takes ~2-4hrs.

Time Line for array installation: Box-in of 1 transponder = ~6-8hrs (number of transponders needs to be determined based on bathymetry), lower tripods/populate transponders in frames = ~12hrs, depth collection = ~2hrs, array calibration = ~4-6hrs.
Backup