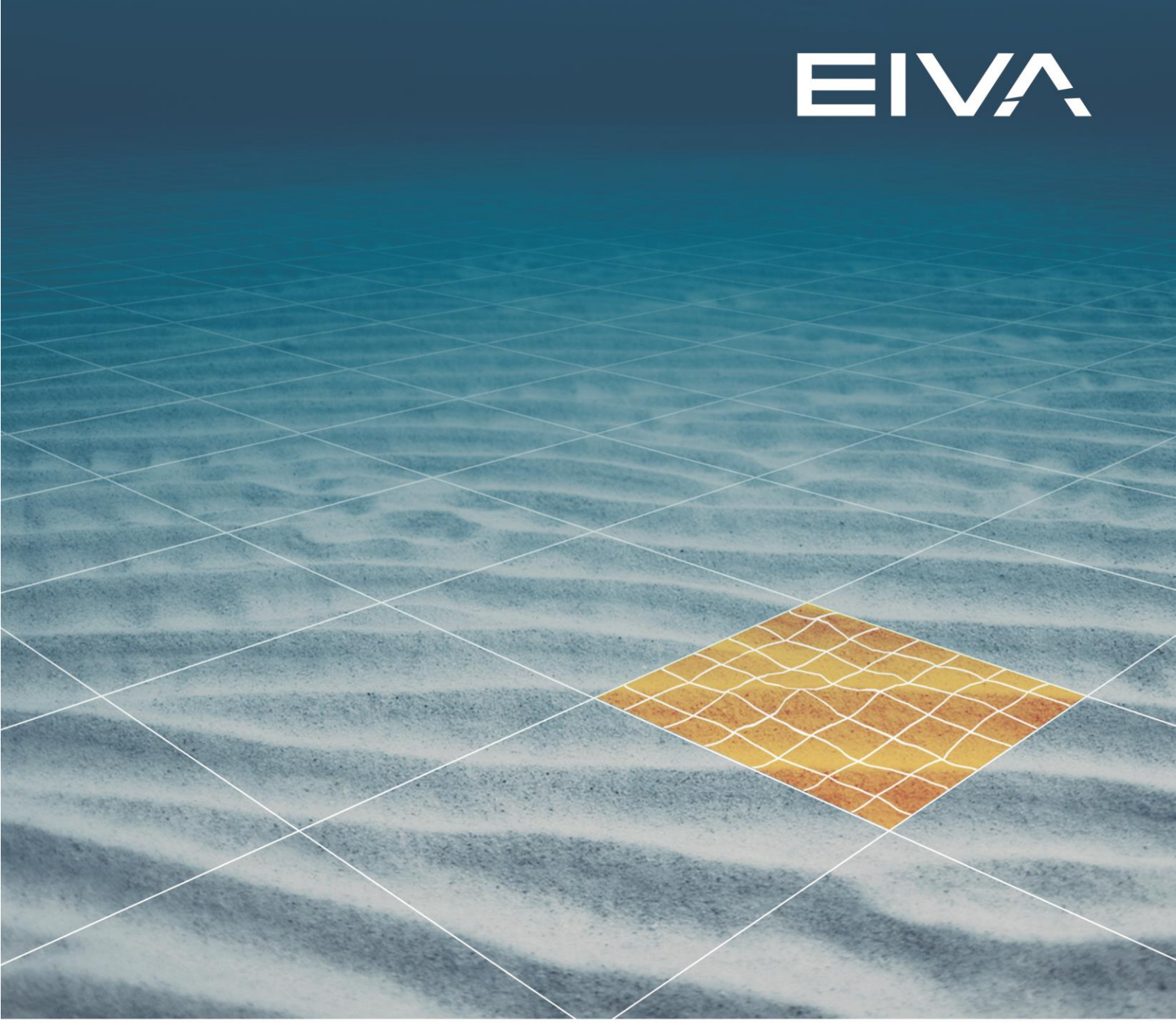

NAVIPAC & NAVISCAN

SHARE SERIAL INTERFACES

Last update: 29/03/2021
Version: 4.5

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1 Introduction

NaviPac allows the operator to share an input (serial device) with another program such as **NaviScan** to ease the system configuration.

2 Data protocol

NaviPac offers a feature to share COM ports with **NaviScan** (or another external receiver). This is done by sending the time tagged (made by **NaviPac**) out on UDP/IP network using the **ATTU** (TimeBox) data format:

```
{
char            Ident[4];       // Packet starter: always EIVA
INT32           Length;         // Length of packet - remaining of entire packet
INT32           VersAndDomain;  // First 16 bit version number (1)
                                // Last 16 bit domain id - unique time box number
INT32           InsId;          // Id of instrument - version 1 COM port number
TIMEVAL         time_stamp;     // Timestamp of reception of telegram (first bit)
}
char            data [length-16];
                                // The raw telegram - not really a part of
                                // structure - but follows right after the header
```

The data is kept in 4 bytes structures to avoid any discussions on special alignments. Where `TIMEVAL` is found in the general `sys/time.h` header file.

In **Windows** it's defined as:

```
struct timeval {
        long    tv_sec;     /* seconds */
        long    tv_usec;    /* and microseconds */
};
```

And in **UNIX/Linux**:

```
struct timeval {
       time_t          tv_sec     // seconds
       suseconds_t     tv_usec    // Microseconds
};
```

The reason for selecting this protocol is

- The data is delivered with timetag as per **NaviPac** – and thus delivered in a consistent way.
- Several programs use the **ATTU** (TimeBox) protocol and can use this directly.

3 Setup in NaviPac

You must enable the functionality in **NaviPac** via the **Project Settings** menu:

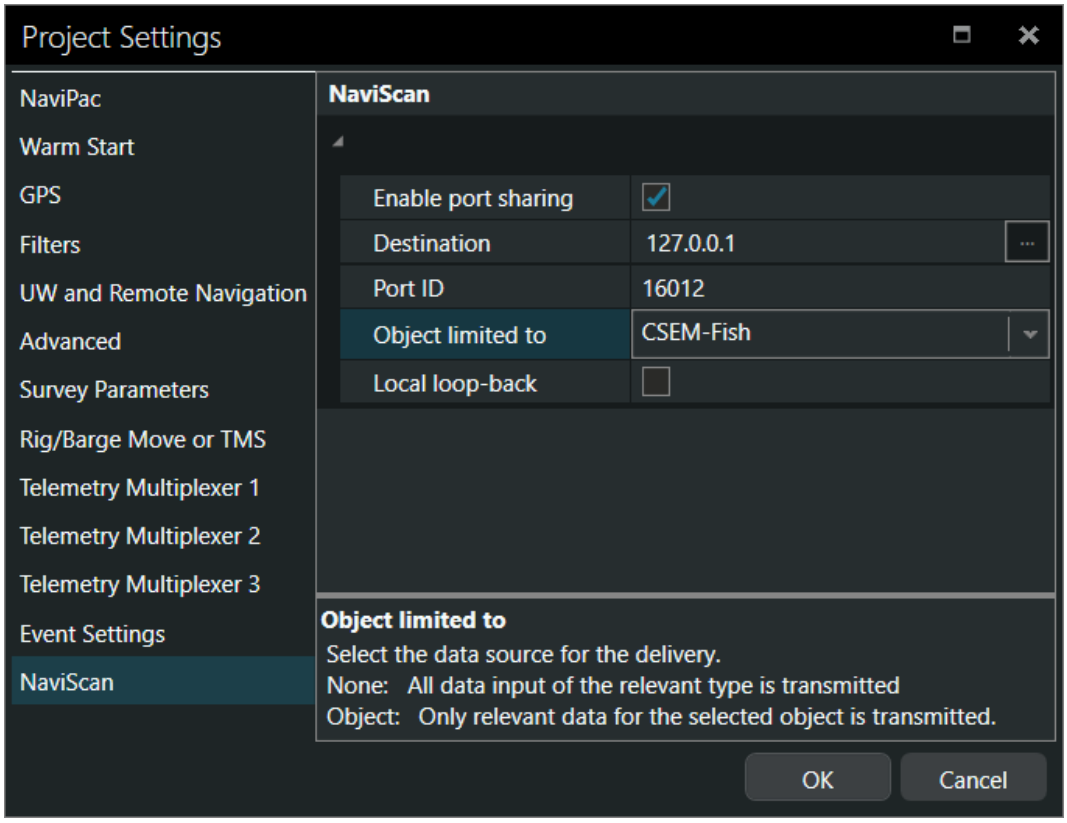

Figure 1 Enable port sharing

- **Enable port sharing**
  Must **NaviPac** export data from data inputs to **NaviScan** - and thus enable port sharing between the two programs without losing time tagging accuracy. Is only applicable for serial (COM) inputs and UDP inputs of:
  - GPS
  - Gyro
  - Motion Sensor
  - DVL
  - Bathy
  - Pipe tracker

  Sharing can be used on same pc or on remote pc(s).
- **Destination**
  Type the destination address of the receiver computer, eg

10.10.1.33 For specific pc receiving the data.
10.10.1.255 For broadcast to multiple receivers on same subnet.
127.0.0.1 For local pc only.

- **Port ID**
  The data will be sent out as UDP/IP messages using the ATTU format. Each serial port will send its own UDP port defined by the original port number plus this add-on. If you eg enter 10000 then COM1 will be sent on UDP 10001 etc.
- **Object limited to <Object/vessel>**
  Select the data source for the delivery.
  - None: All data input of the relevant type is transmitted
  - Object: Only relevant data for selected object is transmitted, eg ROV.

The changes in setup will not be available until next restart of navigation.

4 Setup in NaviScan

The drivers can be read into **NaviScan** by using the **ATTU** interface:

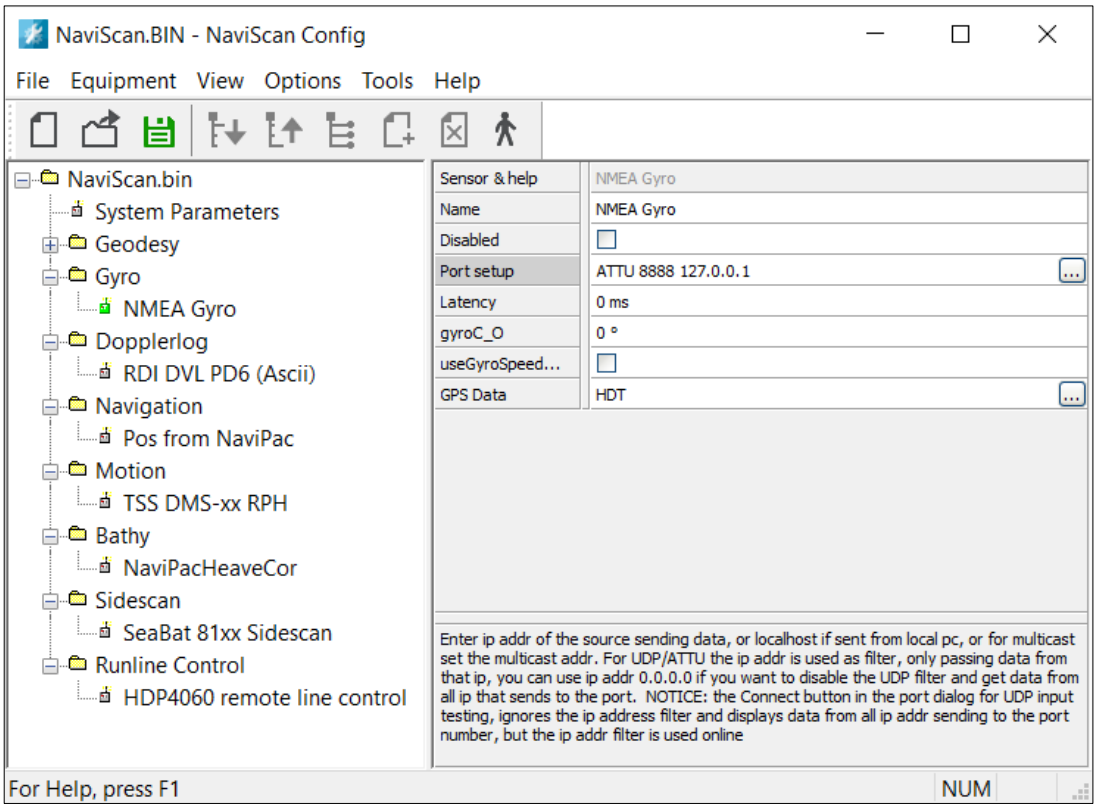

Figure 2 NaviScan.BIN – NaviScan Config

The trick is to know the mapping between **NaviPac** drivers and the **NaviScan** drivers, so you select the correct driver both places.

5 Automatic import

NaviPac stores a file under **C:\EIVA\NaviPac\Db** called **NP2NS.INI**.
This file gives a full listing of the outputs from **NaviPac** (shared ports plus defined outputs):

```
[NaviScan]
m_enablePortSharing=1
m_interpretedNpDataFromObj=-1
NPTCP=192.168.2.13
m_portAddition=16000
m_ioNaviScan=127.0.0.1
m_portShareData=0
[GPS]
INS001=44,GPS1 (NMEA) From NaviPac,21000,0.000,0.000,0.000
no_obj=1
[GYRO]
INS001=133,HMR3000 Gyro From NaviPac,16016,0.000,0.000,0.000, 0.000, 0.0000
no_obj=1
[MOTION]
INS001=227,MDL From NaviPac,16052,0.000,0.000,0.000,0.000,0.000,0.000, 0.0000
no_obj=1
[ACQ]
no_obj=3
INS001=795,SBE49 CTD,16017,0.000,0.000,0.000,0.0000
INS002=796,SBE49 CTD2,16017,0.000,0.000,0.000,0.0000
INS003=704,Digiquartz Depth,16066,0.000,0.000,0.000,0.0000
[DVL]
no_obj=0
[NP-OUT]
no_obj=3
INS001=649,EIVA runline control,9999,0.0,0.0,0.0,RLN,2
INS002=671,Position (Exp.) to NaviScan,9001,0.000,0.000,0.000,POS,2
INS003=670,Gyro to NaviScan TEST,9003,0.0,0.0,0.0,CALCGYRO,2
```

The file includes first a copy of the general setup as defined in the NaviPac global parameters. Hereafter it includes a section per sensor type:

- **GPS**
  The GPS receiver
- **GYRO**
  Defines the gyro instruments
- **MOTION**
  Defines the motion (roll, pitch & heave) sensors
- **ACQ**
  Define data acquisition inputs such as bathy sensors
- **DVL**
  Doppler logs
- **NP-OUT**
  Special data outputs

Each instrument will be defined by

- NaviPac type number
- User defined name
- **ATTU** (TimeBox) port number

In **NaviScan Configuration** you may import this via the **File** menu:

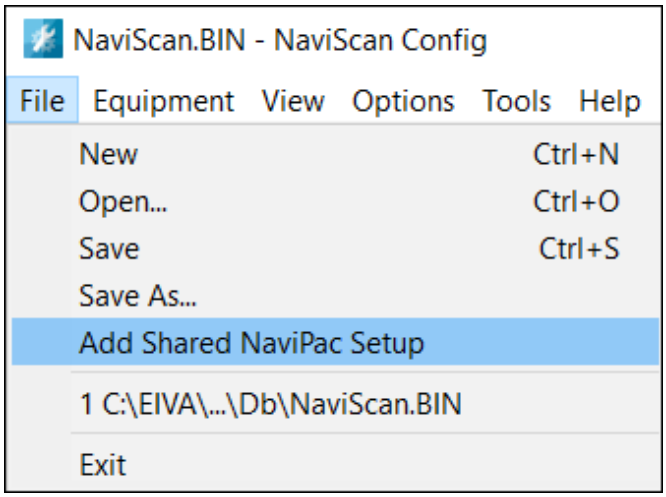

Figure 3 NaviScan.BIN – NaviScan Config – Add Shared NaviPac Setup

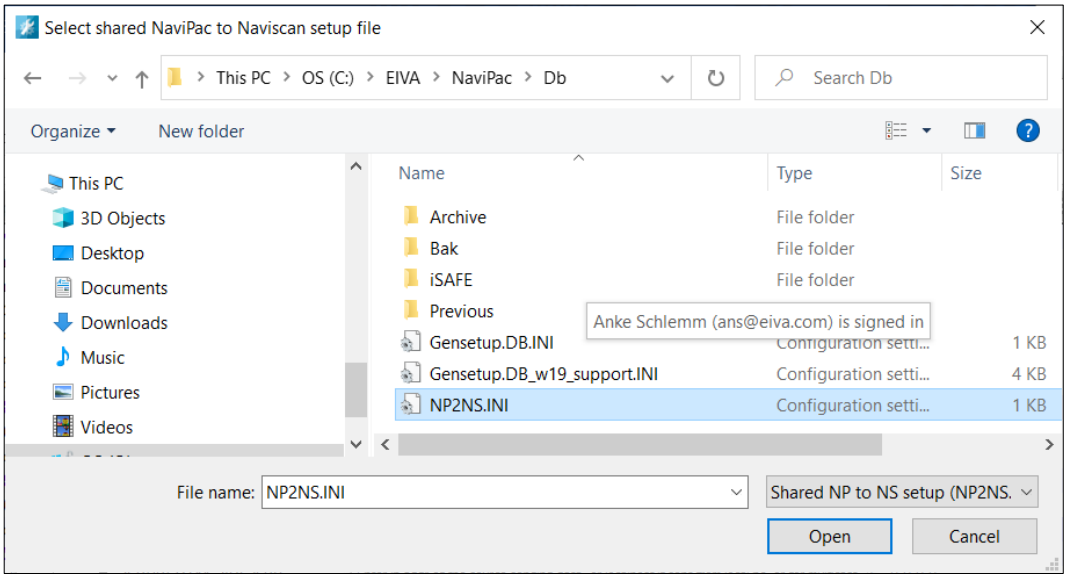

Figure 4 NP2NS.INI

And voila – the setup is totally setup

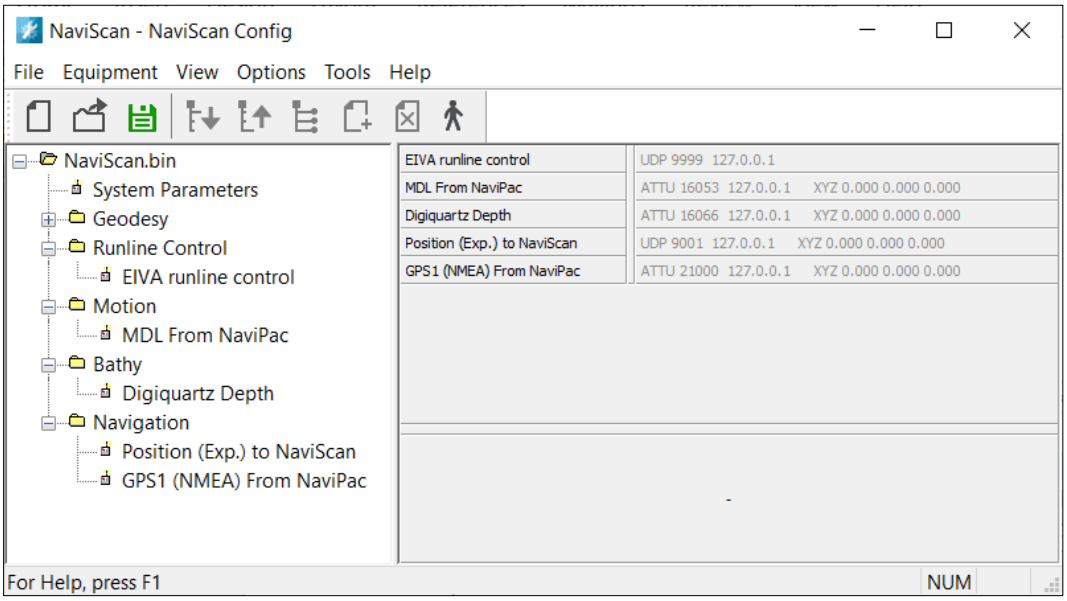

Figure 5 NaviScan Configuration with instruments using the ATTU format

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