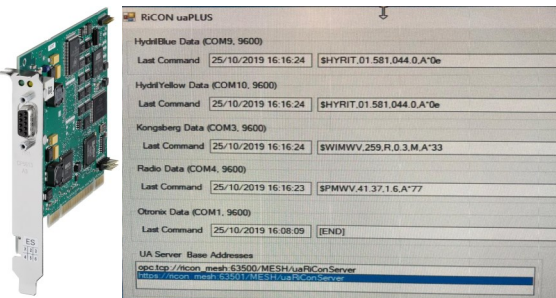


---

# Communication Interface Upgrade





```
public delegate void MessageReceived(string message, DateTime time);
public event MessageReceived messageReceivedEvent;

1 reference
public SerialHydrilYellow(string Name, AppPlugin App, ConfigBuilder.ConfigLoader Config)
{
    _name = Name;
    _config = Config;
    _app = App;

    //Setup Serial Communications
    InitialisePort();

    _thread = new Thread(new ThreadStart(UpdateThread));
    _thread.Name = _name;
    _thread.Priority = ThreadPriority.AboveNormal;
    _thread.Start();
}
```



## Duration

12 weeks

## Scope Overview

Review existing documentation of the interfaces and protocols from existing systems.

Develop hardware / software solution to capture data on-board rig.

Analyse data to establish protocol, format and content.

Develop specification documentation that includes hardware requirements, operating system / software, programming environments, languages, functional requirements, define data requirements, ranges & frequencies, and define interfaces to all external systems.

Develop software modules for server / operating system core framework, serial interface library RS-232, RS-422, RS-485, Siemens Profibus/DP interface and management interface.

Develop interface protocols for NOV Drilling, GE BOP Control, Kongsberg DP, Weather Station, Acoustic ADCP & MH Wirth Rig Logger.

Complete the following pre-delivery scope which includes: Generating all Factory Acceptance Test (FAT) documentation and complete testing using simulation where actual systems are not available.

Provide installation and commissioning work packs.

Provide a software engineer to install and commission all hardware & software.

## Achievements

Customer now has a fully supportable system that will "pay for itself" over a short period of time. The project has created no downtime to install, and was a cost effective solution. Prior to MESH Global's involvement, this upgrade was deemed too expensive from other providers in the marketplace.

## Background

Maersk Drilling determined they could make significant cost savings across their three D-Rigs (Developer, Discoverer and Deliverer) by more detailed monitoring and analysis of riser section stresses, which would allow them to move to a more proactive preventative maintenance regime.

Maersk engaged MH Wirth to create a Riser stress application. As part of the core data collection they needed information from several existing rig systems. Maersk had an existing, redundant server system that interfaced to these systems. This system was based on a Windows XP operating system which is no longer supported. It contained aging hardware and interface cards, and no available manufacturer support. MESH Global has a wealth of experience dealing with obsolescence on aging assets, and was asked to undertake this scope.

## Requirement

The following Information was to be collected, decoded and made available to the MH Wirth rig logger system;

- Dynamic positioning data (Kongsberg DP)
- Riser section measurements (Otronix)
- Subsea BOP control system data (GE / Hydril SEMs and ERA)
- Weather and environmental data (Radio system)
- Drilling, mud system and tensioner data (NOV rig systems)

## Approach

MESH Global undertook a review of the existing hardware and physical interconnections. We were required to produce a system that required minimal changes to the rigs existing systems. Available documentation, a spare machine, and a cloned image from one of the vessels was provided by the client. MESH Global used this equipment to analyse the communication packets and review the existing physical equipment.

## Results

MESH Global were able to re-use the existing electrical systems with no changes. The server hardware was retained and the operating system upgraded to Windows 10 Pro. The serial interface cards were traced, and compatible Windows 10 drivers sourced. Unfortunately, the Siemens Profibus CP5611 card was obsolete so was replaced with a more modern, compatible Windows 10 supported card (CP5613 A2). As the original software application was not supported, MESH Global reverse engineered the communication protocols and developed a new application in Microsoft .NET using Visual C#. To provide future flexibility, the outgoing interface was developed as a fully compliant OPC UA server.

## Benefits

The delivered system is based on current technologies and is now fully supportable. The existing rig systems required no changes, so the client avoided the need to involve multiple OEM's in the project delivery. MESH was also able to provide the offshore support to complete the server upgrade and commissioning. The system is now supported by our 24/7 onshore support Engineers.

Call: +44 (0) 1674 908700

Email: [info@mesh-global.com](mailto:info@mesh-global.com)

Website: [www.mesh-global.com](http://www.mesh-global.com)

