



StoneThree

Venture Technology

Creating new Technology Ventures

Creating scale-ready businesses in diverse industries

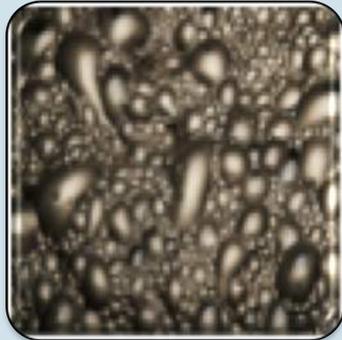
Leveraging common technology base with our entrepreneurial, commercialisation and industrialisation skills

- Technology focus on Digital Signal Processing, Image Processing, High-End Computer Graphics, Software Defined Radio, Machine Vision and Machine Learning solutions
- Multi-disciplined staff of 60+ highly educated and experienced software and electronic engineers, computer scientists and mathematicians
- Partnership model with industry leaders to access new markets
- Various business models with focus on new Technology Ventures



Track record of new technology ventures in several industries

Long legacy of Software Engineering services with industry leading organisations progressing to sustainable partnerships in several verticals



Mining Solutions

- Smart sensors & Productivity solutions
- Remote Monitoring & Diagnostics
- Industrial IoT
- 200 sensors, 40 clients, 60 sites, 10 countries

Chemical Solutions

- Remote monitoring and diagnostics
- Machine Learning, optimisation, deep learning AI

Healthcare SW Solutions

- Data driven analytics, diagnostic / screening sensors, tele-medicine tools
- Machine Learning + Clinical knowledge in cardiology & chronic diseases

Maritime Telecoms

- Maritime Domain Awareness (MDA) and eNav products
- International partnerships for distribution and turnkey solutions

FinTech

- Technology based global equity fund
- Machine Learning to find meaningful signals & hypotheses in data

Maritime Telecoms product development

17 years experience in SDR technology using low-end systems to prototype & de-risk development of high-end production systems

Productising SDR systems from concept to final product

- High Performance SDR signals intelligence system
- Advanced Software Radar Digital Signal Processor
- GSM mobile communications monitoring system

SDR competencies established over 17 years

- Massive parallel waveform processing
- Ultra wideband digitising & channelization
- High speed FEC software implementations
- Advanced cryptographic implementations



Maritime Telecoms product development

Leveraging long legacy in high-end SDR telecoms product development for the maritime market

AIS technology development of Class B AIS Transponder

- Obtained BSH type approval
- Full access to the underlying firmware and hardware technologies
- Product is based on the CML Class A chipset



AIS Locator for vessel tracking & emergency beacon for artisanal fishermen

- Targeted at governmental authorities responsible for Maritime Domain Awareness
- Key differentiators: solar powered, satellite reception and low cost

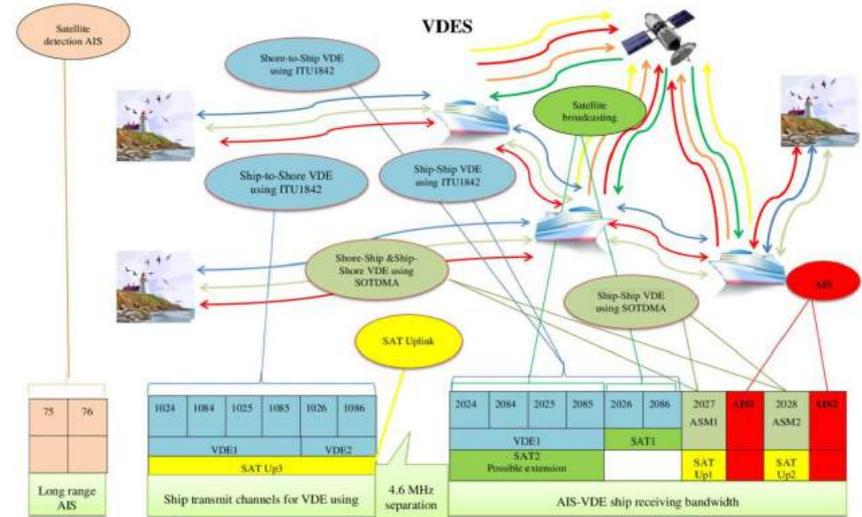


Maritime Telecoms product development

SDR platform for the next generation AIS: VHF Data Exchange System (VDES)

Fast development cycle for quick time to market and adapting to specification changes

- Custom SDR framework that can quickly be adopted to customer's needs
- Continuous integration with HW in the loop
- Real time data visualisation
- Scalable software architecture
- SDR framework is platform agnostic



- Library of core DSP and comms modules that can be configured to support specific protocols
- High-bandwidth data processing suitable for high bitrate or multi-channel transceivers
- Dual-core ARM running up to 1 GHz
- 1 GByte DDR3L RAM at 650 MHz
- Tightly coupled FPGA allowing high-speed computationally intensive tasks to be moved to hardware
- Low power platform with passive cooling



VDES Interoperability Testing - at a Glance

Getting to a system that works for all

- The Aims of Interoperability testing
- The Pains to be addressed
- The Gains and Benefits
- The Proposed Solution
- Next steps



The Aims of Interoperability testing

Increasing VDES user adoption rates

- Learn from the history lessons of AIS adoption
- Even though the safety, security, environment and economic use cases are compelling we need to mitigate the risks for early adopters
 - Maritime administrations
 - Ship owners
 - Port Authorities
- Availability of interoperable VDES mobiles and base stations at a competitive price



The Pains to be addressed

What are the pains prohibiting early adoption?

- VDES is not a mandatory carriage requirement
- No availability of interoperable VDES base stations and mobiles
- IEC [for VDES] test specifications are some years away
- Difficult to validate the perceived safety, security, environment and economic benefits in practice



The Gains and Benefits

Interoperability testing will address some of the Pains

- Interoperability testing will provide valuable inputs to the IEC standards process for VDES
- eNav and associated test beds would gain confidence in the use cases and available VDES units will provide information on their integration within the eNav environment
- Developers, Integrators and Vendors will be able to:
 - participate in test beds / trials / demonstrators
 - work with early adopters with greater confidence
 - integrate and start with system (ship and shore side) testing
- Test beds, Trials and Early adopters will be able to:
 - include VDES solutions from more than one vendor
 - gain confidence with compliance to the standard as generally understood
 - gain confidence that expenditure on early systems has some measure of future proofing



The Proposed Solution

Stone Three is willing to host and facilitate testing

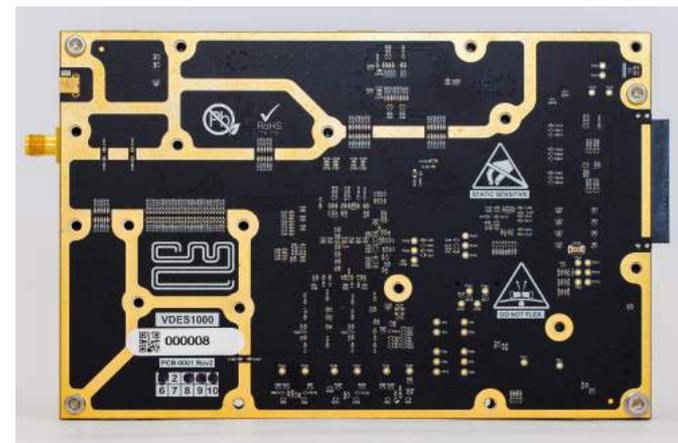
- Will host a fully compatible VDES unit that implements the full VDL as described in ITU-R M. 2092 (the “*Golden Unit*”)
- Put in place an NDA between those participating in the interoperability tests
- Ensure an agreed interoperability test specification
- Establish an agreed statement with regards to VDES units that pass the interoperability testing



The Proposed Solution (cont'd)

Stone Three will provide the VDES “Golden Unit”

- The VDES unit will be available Q2 of 2017
- The internal test and validation plan and documentation based on:
 - IEC 61993-2 (the AIS specification) and
 - IEC 60945 (Maritime navigation and radio communication equipment and systems – General requirements – Methods of testing and required test results)
 - Expanded as necessary to cover ITU-R M.2092-0 (the current VDES spec)
- Drafted in collaboration with CML Microelectronics
- The Stone Three VDES development was driven by these specifications and includes test equipment



Next steps?

The proposed next steps are

- Obtain list of interested parties wishing to participate
- Distribute and obtain consensus on detailed test plan and NDA
- Implement the test platform
- Execute first test and publish results once successful
- Review the process and continue



VDES Interoperability Testing – in Conclusion

Getting to a system that works for all

- ✓ From AIS experience: remove risk for early adopters
- ✓ Address the key challenges of:
 - no availability of range of VDES interoperable devices
 - no VDES IEC test specifications for product designers
 - long delays before benefits of use cases can be validated
- ✓ Stone Three has developed a fully compliant VDES unit that:
 - will be available early Q2 of 2017
 - test and validation documentation forming the basis for IEC standards process
- ✓ Stone Three is willing to host and facilitate Interoperability Testing with other interested parties



Thank you.

