SCS v5

OFFICE OF MARINE AND AVIATION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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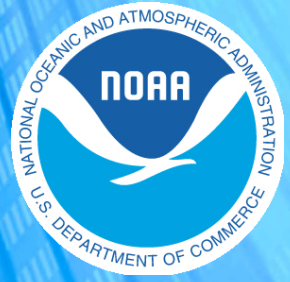
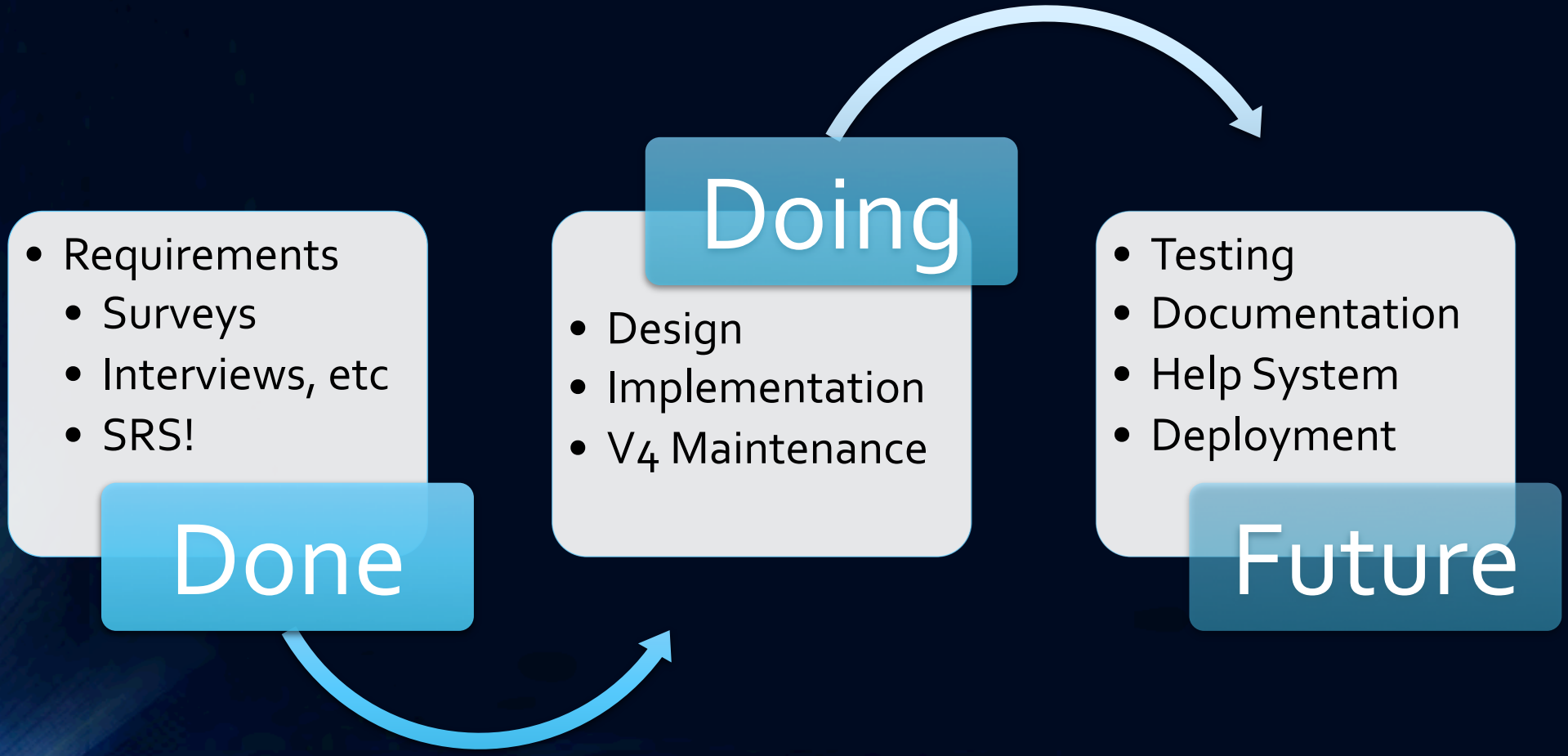


10/2016

SCS v5 Lifecycle



V5 Features

- Web based user interface
- More dynamic and interconnected
- More robust QA/QC
- More useful output/products
- Less Flexible in some regards
- Modern technologies and requirements
- MySQL backend

Web Based

- Written in ASP.NET
- Model-View-Controller (MVC) architecture
- HTML5 and JavaScript
- Ease of client installation, patching / maintenance
- Client OS independence
- Massive reduction in security complexity
- Mobile enabled

More Dynamic and Interconnected

- WebAPI, SignalR, .NET, TCP/IP, etc for easier 3rd party interaction
- Automatic sensor detection
- Real-time sensor configuration and template changes
- Reliable off-ship communication
  - MSMQ, Aspera, db replication, TBD
- Client to Client communications and transfers
- SCS 'social network'

FSDB Viewer

Search all

Show Unassigned ships?

Drag a column header and drop it here to group by that column

MOC Name	Ship Code	Device Name	Device Type	Manufacturer	Model No.	Details
Pacific	FA	GP-150	GPS	Furuno		Details
Pacific	FA	Port Ultrasonic Anenometer	Anemometer	RM Young		Details
Pacific	FA	Starboard Ultrasonic Anenometer		RM Young		Details
Pacific	RA	GPS	GPS	Furuno	GP90	Details
Pacific	RA	Sounder	Echosounder	Furuno	FE700	Details
Pacific	RA	Gyro	Gyrocompass	SG Brown	Surveryor	Details
Pacific	RA	TSG	TSG	Sea-Bird	TSG-45	Details
Pacific	RA	Weather Translator	Anemometer	RMYoung	26800 translator	Details
Atlantic	HB	PDIM	CTD	SeaBird	SBE PDIM	Details
Atlantic	HB	RDI ADCP	ADCP	RDI	Ocean Surveyor	Details

1 2 3 4 5 6 7 8 9 10 ...

10 items per page

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Device Details

TSG

Device Name	TSG
MOC Name	Pacific
Ship Code	RA
Serial No.	4541355-0167
Location	Bow Thruster Room
Child Devices Count	0
Device Type	TSG
Manufacturer	Sea-Bird
Model No.	TSG-45
Can be Calibrated	No
Location (X,Y,Z)	
CD Number	na
External to SCS	No
Comment	SBE-38 S/N:3853699-0482
Calibration Dates	Wed, 09 Jan 2013 23:22:20 GMT
Calibration File	
Device Tests	

Test Date	Wed, 11 Sep 2013 23:22:20 GMT
Results	sat
Tester	jnm

Images 1 image

1

More robust QA/QC

- Increased interaction with FSU
- Massive improvements to real-time data quality checks
- Ability to add your algorithms
- Data will be flagged prior to leaving the ship
- Data State Quality Control
  - Good, Suspect, Bad, Not Checked
- Data Error Type Flags
  - Operation, Hardware, Recording, Corrupted Data Stream, Missing, Timing
- Alerts
- Statistical tools for real-time and post-processing analysisown algorithms

Configuration: Inventory, sensor messages, and derived fields

- Sensor devices
  - Physical device inventory metadata required
- Sensor message definitions: NMEA. Serial, Polled serial, Derived
- Message data field definitions
  - Quality control conditions
- User-defined calculations
  - Inline function definitions
  - Framework for future scripting language
- Pre-programmed calculations
  - Statistical aggregations of time-series
  - Moving moments and correlations
  - True wind, etc

Field Definition	Friendly Name	Type	Units	
GPS1-VTG-SOG	speedOverGround	float	kts	× Delete
YOUNG-WMD-DIR	apparenAzimuth	float	deg	× Delete
YOUNG-WMD-Spd	apparentSpeed	float	kts	× Delete

1 20 items per page 1 - 3 of 3 items

```
Acos(
  (apparentSpeed * Cos(Radians(apparentAzimuth)) - speedOverGround)
  / Sqrt(
    Power( apparentSpeed, 2) + Power(speedOverGround, 2)
  - 2 * apparentSpeed * speedOverGround * Cos(Radians(apparentAzimuth))
  )
)

```

Events

- Customized supplemental logging of data that is concurrent to an event on the ship
- Logs data at a moment in time and/or over a specified timespan
- Selected sensor data and metadata
- User-defined UI
- Button click events annotate snapshots of current sensor values
- Event logging may be automated and may be run in parallel in multiple locations
- Temporal and Spatial monitoring / alerts

Type
Acceleration
Angle
Area
Capacitance
Conductivity
Current
Density
Electric Potential
Electrical Resistance
Energy/Work
Flow -- Mass
Flow -- Volume
Force
Frequency
Irradiance
Length
Magnetic Flux
Magnetic Flux Density
Mass
Power
Pressure
Ratio -- Other
Ratio -- Volume
Speed/Velocity -- Angular
Speed/Velocity -- Linear
Temperature
Time Duration
Torque
Turbidity
Viscosity (dynamic)
Viscosity (kinematic)
Volume
Weight

More Useful Products

- Desire to have output be useful to end-users
- Compliance with common vocabularies
  - Units taken from UDUNITS and current data set in SCS
  - Need to form a quorum to validate user submitted values
  - Want to stay in sync with UNOLS and external standards
- Need feedback on best output format
  - RDF vs XML vs JSON? NetCDF? Flat files? …

Data Field Category Name	Measurement Type
Count	
Course Over Ground	Angle
Datetime	
Depth	Length
Heading	Angle
Latitude	
Longitude	
Other	
Other -- Decimal	
Other -- Integer	
Relative Wind Direction	Angle
Relative Wind Speed	Angle
Sound Velocity	Speed/Velocity -- Linear
Speed Over Ground	Speed/Velocity -- Linear
Time	
True Wind Direction	Angle
True Wind Speed	Speed/Velocity -- Linear
Water Conductivity	Conductivity
Water Salinity	
Water Speed	Speed/Velocity -- Linear
Water Temperature	Temperature

Less Flexible

- Hard-coding of names in attempt to standardize
- 'Physical First' configuration approach
- Certain meta-data becomes mandatory
- Database logging becomes mandatory
- Locking logging rate to -1?

Modern Technologies and Requirements

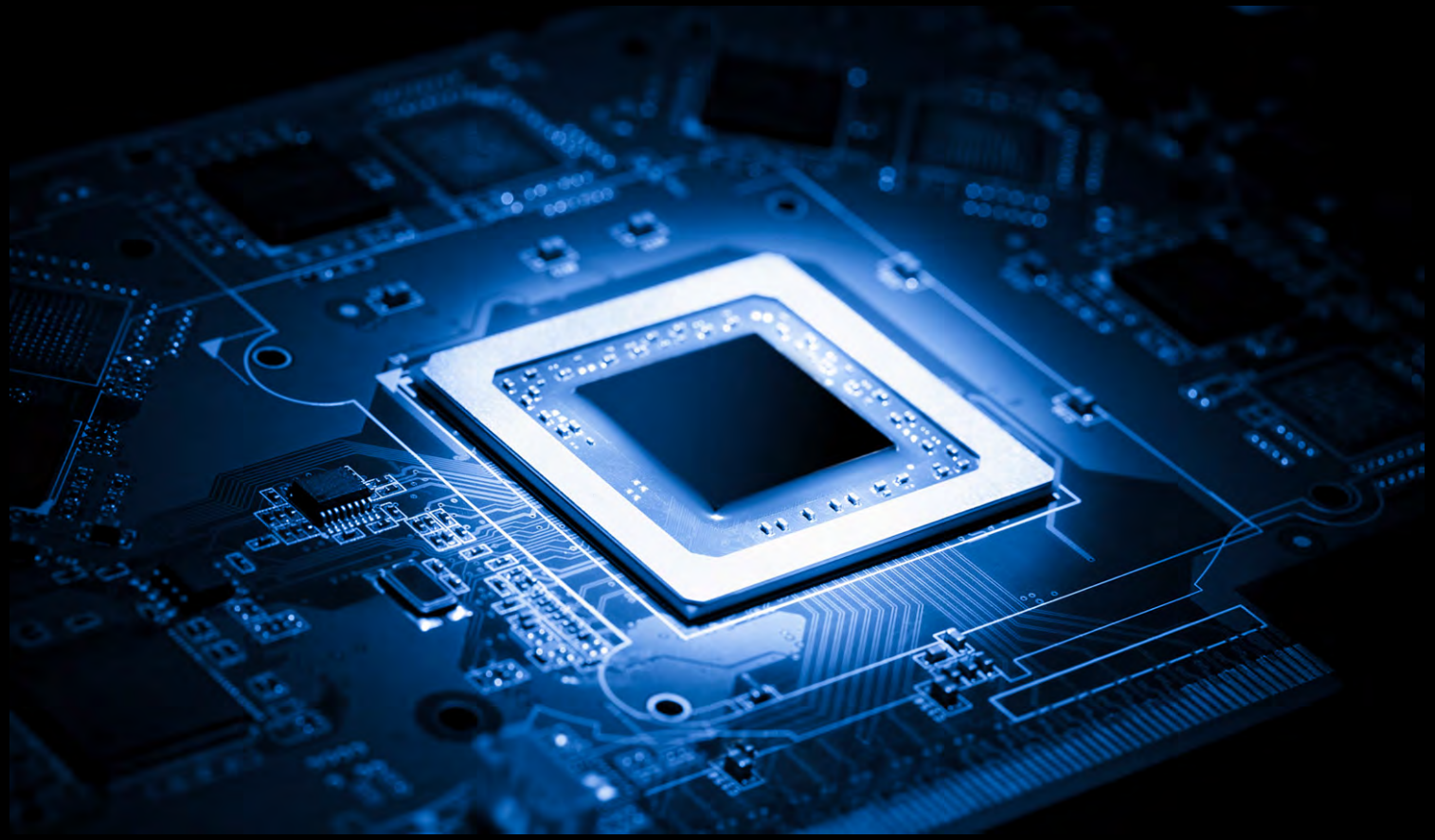
- MySQL Backend
- HTML vs application
- Mobile friendly
- VMWare virtualization support

- .NET Core (Linux! Mac!) ?
- NMEA 2000?

Support and Instruction

- Video tutorials
- Manuals and system documentation
- Annual (free) classes in the United States
- Internal UNOLS support / SMEs
- Fee-based contractor site, email, and phone support

- How can SCS improve data acquisition and dissemination?



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