

S-57

# ENC Tools

EFFICIENT ENC PRODUCTION

WHICH SERVES THE USER!

# MISSION POSSIBLE –

# EFFICIENT ENC PRODUCTION WHICH SERVES THE USER!

At the core of ENC Tools is the editing software ENC Designer which can produce, correct and maintain ENCs. The results will match the IHO ENC Product Specification and the software is compatible with Windows 2000/XP and Linux.

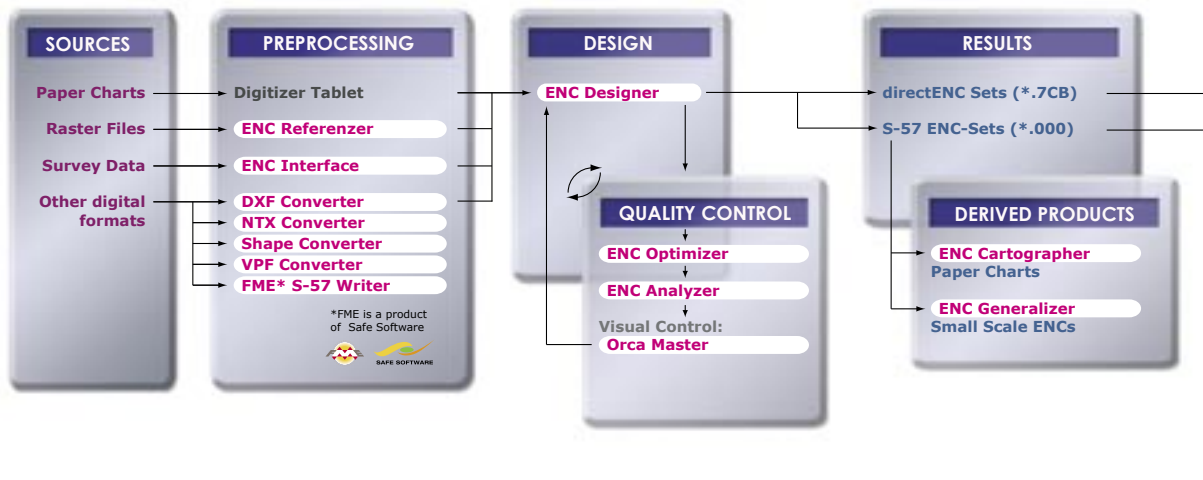
With the software tools ENC Designer, ENC Optimizer and ENC Analyzer, you will receive basic facilities to create the prerequisite for an S-57 data production. There is no need to invest in a data bank (e.g. SQL) as the user works directly on the file structure.

Users of ENC Tools can be found in:

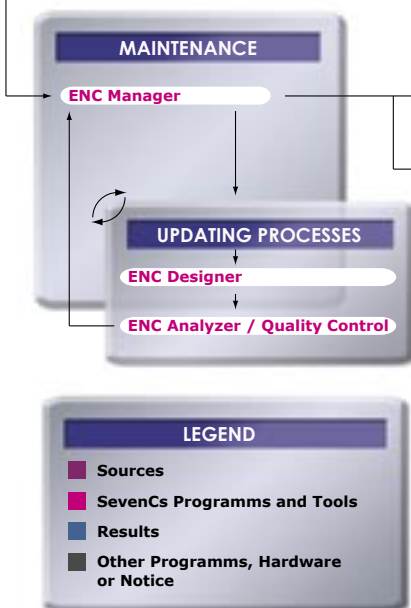
- Hydrographic Services
- Port Authorities
- Surveying Companies
- Coastal Surveillance projects
- Simulation systems
- Navies

## Workflow with SevenCs ENC Tools

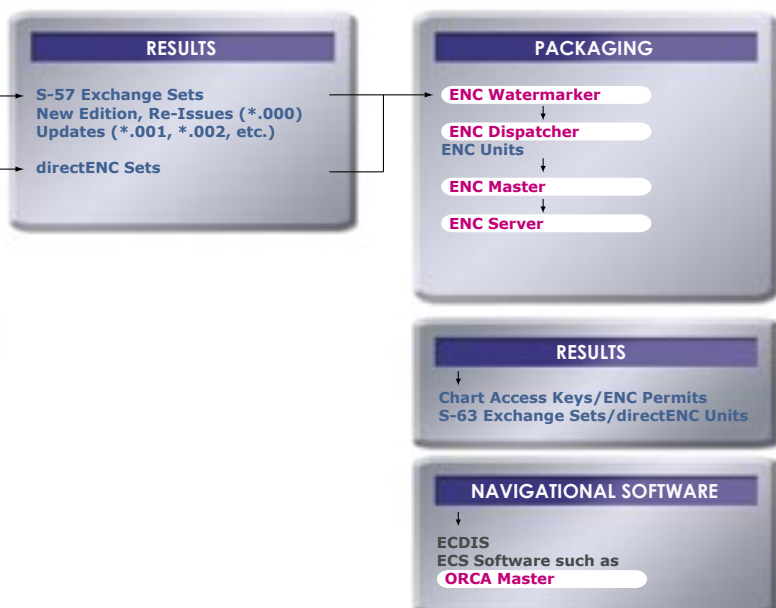
### ENC Production



### ENC Management



### ENC Distribution



# THE HEART OF S-57 DATA PRODUCTION

## ENC DESIGNER ENTERPRISE

Create and maintain your Electronic Navigational Charts (ENCs) in IHO S-57 format. A wide variety of functions enables you to capture, edit, modify and control the quality of ENC data within a workflow production system. Your ENC data sets are stored in a logical structure similar to a database.

Updates and new chart editions or S-57 Exchange Sets are easily created. Uniquely assigned record identifiers allow direct access to the user-defined GIS database. C++ ENC Interface empowers you to extend the ENC Designer Enterprise functionalities.

User-friendly edit functions make it easy to apply new objects or to change existing ones. Extensive functions allow you to query data sets by ensuring a quick identification of object definitions. The option to load raster images in BMP, PNG, JPG and TIF formats for semi-automatic contour tracing helps you to capture your source data and directly convert it into S-57 vector data.

During your work you can see your data displayed precisely in accordance with the IHO Presentation Library for ECDIS. Moreover, you can also view S-57 feature and spatial objects simultaneously.

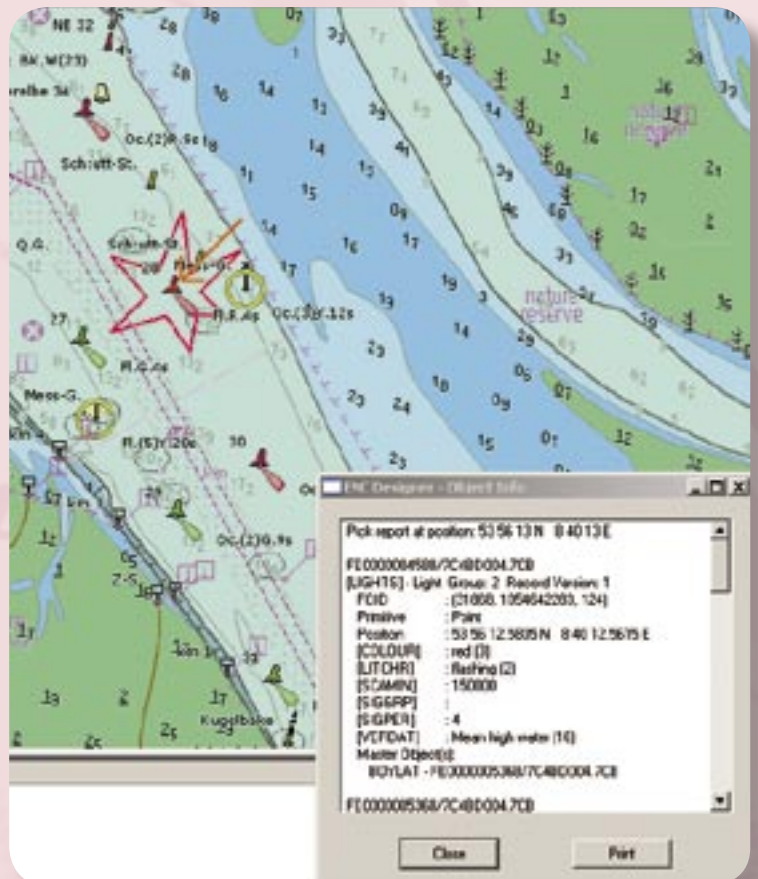
### ENC Designer Enterprise in brief:

- Based on SevenCs EC2007 ECDIS Kernel software which is used in many type-approved ECDIS systems and uses the display engine of type-approved ECDIS
- Powerful editing functions
- C++ plug-in interface
- Read-only mode for visual data validation
- Plot function for data verification
- User-friendly object and attribute queries
- Interactive, semi-automatic data capture via raster tracing, digitiser interface
- Ready for production of AML data sets (extra module)
- Ready to produce Inland ECDIS (IENC)
- Imports and exports ENCs into IHO S-57 data format
- Contains ENC Manager to maintain, update and validate your produced data
- Contains NTX Converter to convert into S-57 data sets
- Transforms coordinates from local datum into WGS84 or vice versa
- Available on Windows 2000/XP, LINUX

## ENC OPTIMIZER

Use ENC Optimizer during data production to minimise data storage and maximise display performance. Used in conjunction with ENC Designer, ENC Optimizer allows you to step through and display the data optimisation that has been achieved.

- Reduces coordinate points in edges
  - Joins adjacent edges and splits them into optimal run lengths
- Removes duplicate or partially redundant edges
- Removes non-significant characters from attribute fields
- Generates sounding clusters
- Generates master-slave relations
- Checks and repairs polygon topology
- Automatically assigns SCAMIN values to S-57 feature objects
- Output report files are in plain ASCII with keyword messages
- Operating System: Windows 2000/XP, LINUX
- Integrates with the ENC Designer
- AML Support is offered as an optional module



# QUALITY CONTROL

## ENC ANALYZER

### S-57 Electronic Navigation Chart Validation

Quality control is integral to the manufacture and maintenance of Electronic Navigational Charts (ENC). ENC Analyzer loads S-57 Electronic Navigational Charts (ENC), Additional Military Layers (AML) and Inland ECDIS datasets and runs an extensive series of checks to identify errors. Since 1996 the system has been enhanced and improved constantly.

#### ENC Analyzer in brief:

- Checks ENC version 3.1, AML and Inland ECDIS products
- Imports and checks:
  - S-57 base files (.000)
  - S-57 update files (.00n)
  - S-57 Exchange Sets (CATALOG.030, CATALOG.031)
- Performs checks according to the IHO Transfer Standard for Digital Hydrographic Data, Publication S-57, Edition 3.1:
  - Recommended ENC Validation Checks S-58
  - Product Specification
  - Use of the Object Catalogue for ENC
  - Data Dictionary and Data Structure
  - Checks to standards.
  - AML Support is offered as an optional service.



**SevenCs and HSA Systems** have a long and successful history in S-57 data production, validation and electronic chart systems development.

HSA Systems Pty Ltd, Sydney, Australia  
[www.hsa.com.au](http://www.hsa.com.au)

## NEWS:

SevenCs has written an S-57 Writer Plug-In which enables almost any format to be exported to S-57. FME Software of Safe Software Inc. supports not only common formats such as Shape, DXF, DGN but also ASCII tables and databases. The SevenCs S-57 Writer Plug-In supports ENC, InlandENC and the different AML products.



FEATURE MANIPULATION ENGINE

FME is an integrated collection of Spatial ETL (Extract, Transform and Load) tools which enables data sharing between applications or data stores with different structures. It also allows spatial data to be manipulated in hundreds of different ways, unlocking the full information potential within a dataset.

Safe Software Inc.  
[www.safe.com](http://www.safe.com)



## CHARTWORLD – THE DIGITAL CHART AGENT

- We offer the largest portfolio of ENC (official and other ENCs). Make your charts available to the public via ChartWorld.
- Worldwide deliveries
- Official ENCs from IC-ENC, Primar and other local authorities
- Inland ENCs official and industry standard



[www.chartworld.com](http://www.chartworld.com)

# ENC SERVICE AND DISTRIBUTION

## Data Converter

Various systems are in use to store spatial information along with attribute information for different purposes. Most of these systems have their own proprietary databases or file formats. Due to this, data exchange has become an important issue. Besides the S-57 plug-in for FME/Safe Software SevenCs offers special tools for converting data from proprietary data formats into S-57 format and further data processing. These manual and automatic processes will result in a high quality ENC ensuring best performance in an ECDIS.

- DXF Converter from AutoCAD DXF files to S-57 ENC data
- NTX Converter from Caris NTX files to S-57 ENC data
- Shape Converter from Shape (ESRI) to S-57 ENC data (Joint project between Photo Science, Inc. Lexington KY 40503 / USA and SevenCs.)
- VPF Converter - VPF products like DNC, VMap0, VMap1, WVS+ to S-57 ENC data

## ENC Watermarker – to protect your intellectual property!

Until now the producers and distributors of S-57 ENCs had no real protection against data piracy. The possibility of having a complete ENC data set or single cells pirated has been a risk for all those who invest in ENC production. SevenCs is putting an end to data theft! Its latest software package called ENC Watermarker, a new tool in the ENC production software family, makes sure your data is always recognisable as yours.

This new technology does not touch the original chart. A replacement data set is generated containing a digital 'watermark'. This is not a visual mark but invisible digital control of selected points in a chart cell using a unique secret algorithm.

## ENC Server + ENC Master ENC data server

The S-63 standard was introduced by IHO for the protection of S-57 data and to enforce security for ENC distribution. The standard provides the basis for the operation of ENC Data Servers such as Regional Electronic Navigational Chart Centres (RENC). PRIMAR Stavanger, IC-ENC and its associated Value Added Resellers (VARs) operate according to the IHO S-63 Standard. Being an appointed IC-ENC VAR itself, SevenCs has developed its own S-63 encryption and permits generation tools as part of the ENC Tools family: The ENC Server and the ENC Master; both are available to all SevenCs customers.

## ENC Cartographer - Create and maintain Paper Charts from your S-57 ENC data repository.

ENC Cartographer gives you the ability to create and maintain INT1/INT2 compliant paper charts from your S-57 ENC data source. ENC Tools now provide an end-to-end digital and paper chart production and maintenance capability. It enables you to layout your paper chart, add plans and insets, automatically generate the Zone of Confidence diagram (ZOC), the Tidal Streams panel, Compass Roses, INT 2 compliant borders and scale bars, all from object and attribute data from the loaded ENC or ENCs.

All work carried out in ENCCartographer is recorded in a layout file so that the source ENC is not modified in any way. The layout file holds all editing done by the cartographer facilitating minimal editing when an ENC update is applied.



A product of HSA

# SCAMIN – PUTTING YOU IN THE FRAME

With the use of SCAMIN, the number of the shown objects decreases in the different ranks, resulting in an adjusted and clear representation. To achieve even more order in the chart image, individual objects of minor importance or clutter can be blanked in the chart image. As soon as SCAMIN is composed by the same software, the consistency between different ENC cells is guaranteed. All cells have the same SCAMIN values and the result is homogeneous ENC's with a clear chart image. SCAMIN values agree widely with the objects which exist in the nearest smaller ENC scale. With the available ENC Optimizer routines, the SCAMIN values can be put automatically on base of the generally valid rank.



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