Introductory Notes on Automation of Surface Observatories

for

(E-Learning – Phase-I of Advanced Training in Instrumentation and Information Systems)

Hand Held Data Logging system with embedded software for automation of surface observatories with suitable data interfaces has been developed by SAMEER, Mumbai under MoU with I.M.D.

Automation System components:

- Hand Held Data Logger (HHDL) with GSM modem for Data entry, automatic processing and message transmission in all conditions.

- Embedded HHDL Software with built in quality checks to enable user to do all tasks related to synoptic observations.
- Synoptic Observatory Software (SOS) as an alternative to HHDL.
- Synoptic Server Software (SSS) Server software to collect synoptic data from various places (HHDL/PC) and also offers various other functions.

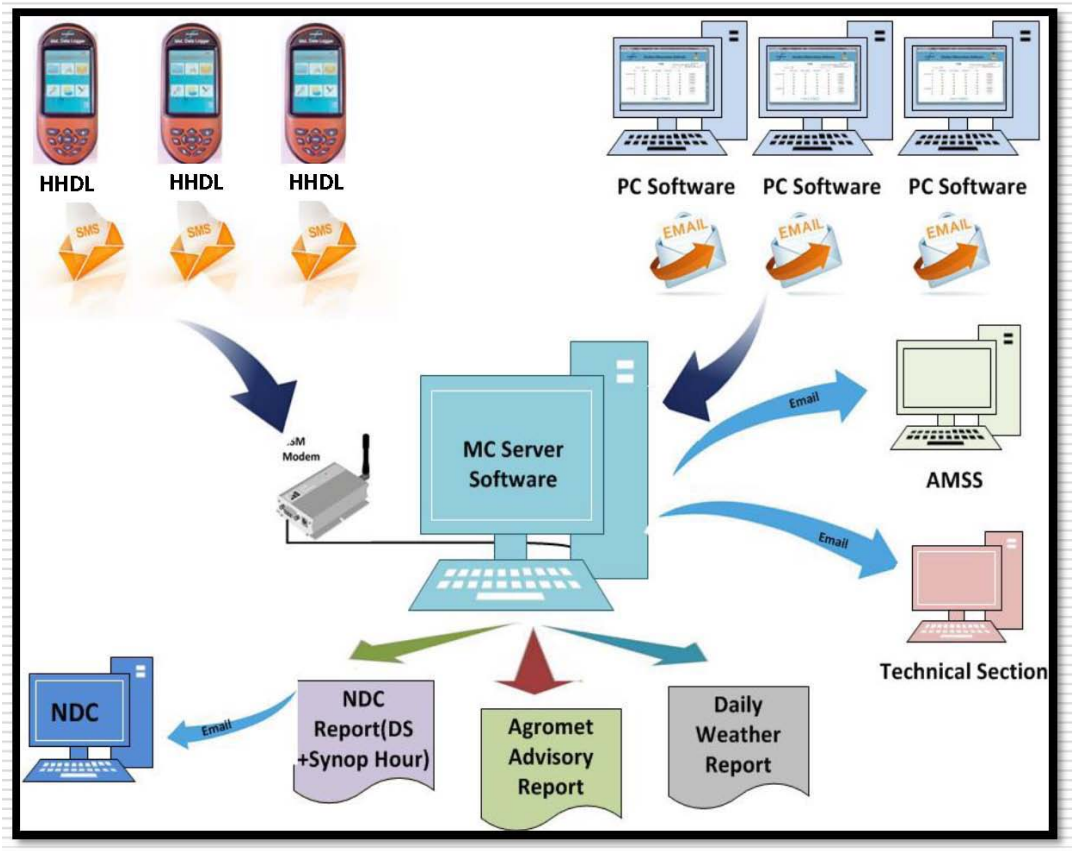
Need for Automation:

- In the current scheme of things, Synoptic Data collection, Processing and Transmission is done manually.
- The process is time consuming, requires proper attention, and prone to computational errors.
- Quality of the SYNOP data is subjective and non-uniform.
- Data Availability at MC/RMCs has large delays because of the latency involved in manual transmission.
- Report Generation and scrutiny at MC/RMCs is again manual and suffers the same problems faced at Observatory.
- Data Archival at NDC happens after long time.

Surface Observatory Automation Project: Features

- Surface Meteorological Data Collection at Synoptic hours on HHDL / PC.
- Automatic Processing of Synoptic data with quality checks to generate synoptic message.
- Instant Transmission of Synoptic message to Regional Met Center (RMC) through SMS / Email.
- Server at all RMCs to automatically collect, check and process Synoptic Messages in near real time.
- Automatic Transmission of quality Checked Synoptic messages on GTS.
- Automatic Generation of Meteorological Reports at RMC

System flow diagram :



Benefits:

- Instant availability of high quality surface observational data on GTS.
- Data base of Surface observations at RC will be useful for automatic generation different reports.
- Significant saving in the man-hours and in stationery due to elimination of manual work.
- Availability of latest surface data at NDC for research work and commercial usages.
- Being Battery operated, HHDL enables timely SYNOP data entry and transmission from remote observatories facing power shortage.

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