



# Health Management Information System

State Institute of Health and Family Welfare,  
Jaipur

# Basic Definitions

## Data

“Messages not evaluated for their worth in specific situations”

Primary

Secondary

## Information

“Evaluated data”

“A resource with cost & benefit

“Potential knowledge”

“An essential input for decision making

## Record

“A document of transaction between a client and service provider containing details of who did what to whom, when and where”, e.g.

A bill

A prescription

A discharge ticket

A laboratory report

A register



# Information System

“Comprehensive, coherent arrangement organized on an organizational or major program basis to collect, process and provide coordinated information to serve multiple needs of management system”

# Data Triangulation

The synthesis and integration of data from multiple sources through collection, examination, comparison and interpretation

# 12 Step Approach to Triangulation



## Planning for triangulation

1. Brainstorm questions
2. Identify questions that are important, actionable, answerable and appropriate for triangulation
3. Identify data sources and gather background information
4. Refine the investigation question(s)

## Conducting triangulation

5. Gather data/reports
6. Make observations from each data-set



# 12 Step Approach to Triangulation

7. Note trends across datasets and hypothesize
8. Check (corroborate, refute, modify) hypotheses
9. Identify additional data source(s) and return to step 5
10. Summarize findings and draw conclusions
11. Communicate the results and recommendations
12. Outline next steps based on findings

# Characteristics of Data Sources for Triangulation

1. Programmatic data
2. Biological data (surveys)
3. Behavioural data





# Health Information System

“an integrated effort to

- collect,
- process,
- report and
- use health information & knowledge for
  - influencing
  - policy-making,
  - program action, and
  - research.

# M.I.S. ?

A two directional characteristic of information flow,  
with systematically designed arrangement to -

- Generate
- Collect
- Analyze
- Store
- Present
- Make available

required information to different managerial levels  
for improved and timely decisions and actions

# Definition

- MIS is a system having a combination of
    - persons,
    - a set of manuals, and
    - certain equipments to
      - select,
      - store, process and
      - retrieve data to -
- reduce the uncertainty in decision making by yielding information to managers at the time they can most efficiently use it.

# Essential Features of Information System



- Reliable
- Not too much paper work
- Data transmission - accurate and timely
- Availability in disaggregated form
- Shortest time lag between collection and transmission
- Data must be available to assess both quantity and quality of health care
- Simple- recording reporting and analysis

# Service Statistics v/s MIS

- Service statistics- generate data
- MIS -utilization of data in the planning and control activities, in an organization




# Information in Health Care Delivery.

## Why

- Evidence based policy and strategic decision-making
- Program management
- Monitoring the process and outcomes
- Evaluation of achievements

# HMIS– Need

- Increasing utilization
  - Increasing client satisfaction
  - Increasing health status
  - Induction of manpower
- 
- A large white arrow points downwards from the first four bullet points to the second set of bullet points, indicating a flow or consequence.
- Problem solving
  - Resource allocation
  - Rewards / Promotions
  - (at times for Fault finding)



# HMIS: Objectives

- Strategic planning
- Disease surveillance systems
- Use of ICD-10
- National health database
- Technical support to strengthen data analysis
- Research
- Use of scientific evidence based on research



# Other Objectives

- Medical care-
  - Quality assurance &
  - Assessment of outcome
- Cost control & productivity enhancement
- Utilization analysis and demand estimation
- Program planning & evaluation
- Simplification of Records
- Education
- Clinical research

# Sources of Data

- Diaries
- Family registers
- Hospital registers / Records
- Periodic reports
- Rapid surveys
- Exit interviews
- National sample survey
- Census
- Special studies

# Data :Attributes

- Accurate
- Valid
- Reliable
- Timely
- Complete
- Retrievable

# Collection of Data:

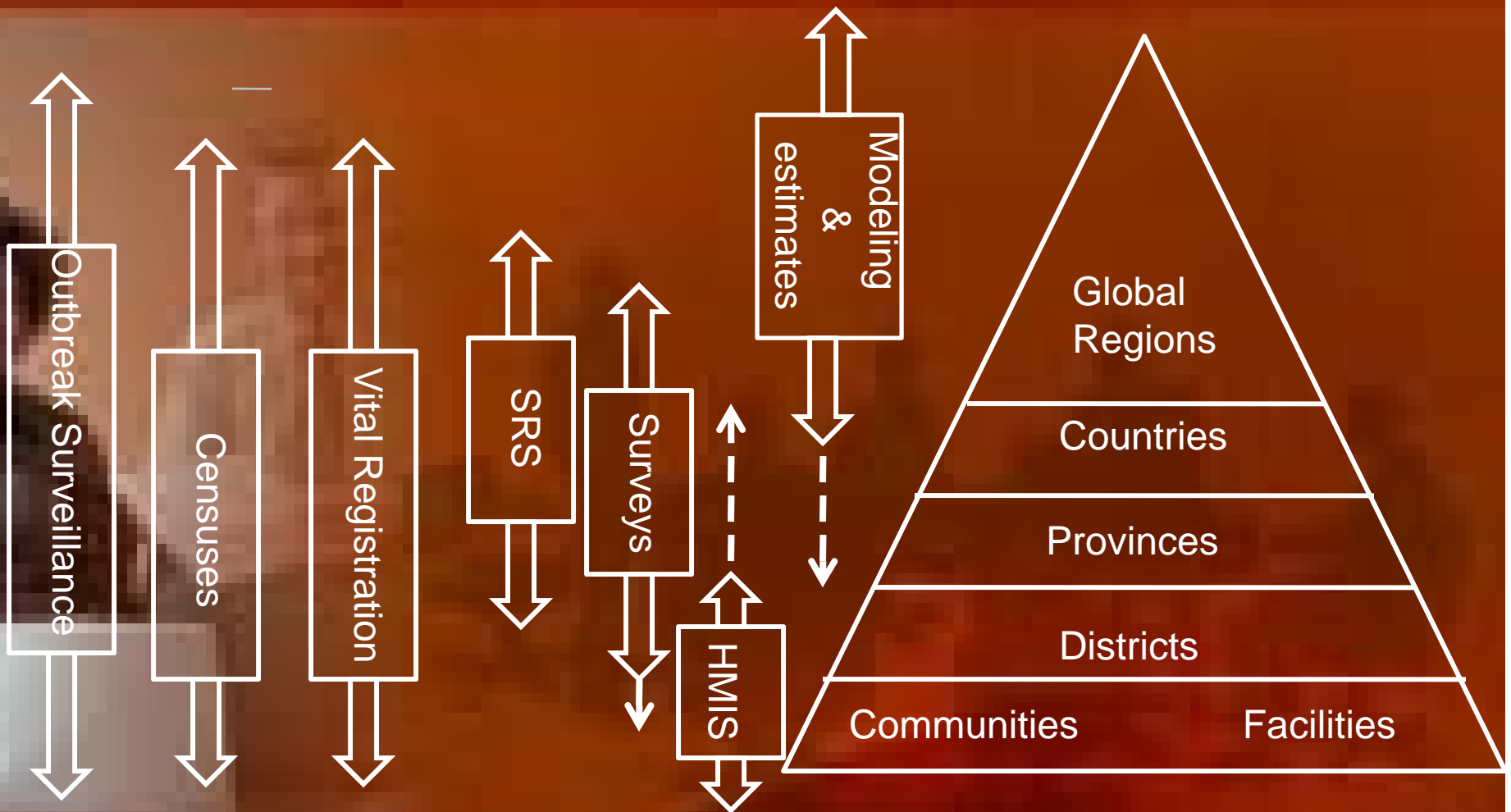
## Data Collection Tools

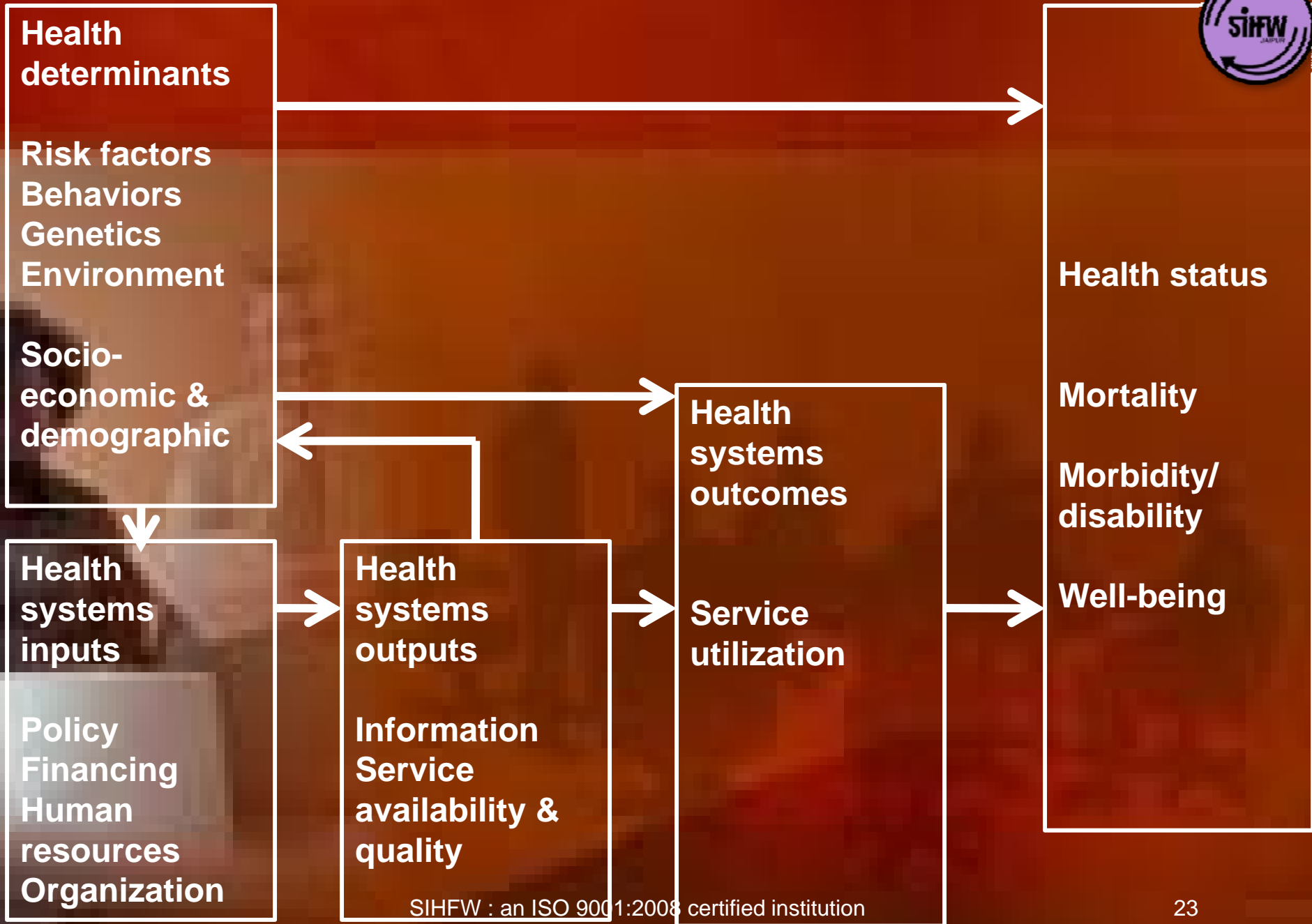
- Reporting Formats
- Online reporting
- Eligible Couple Survey
- Concurrent Evaluation/ Studies
- Survey by different Agencies
- Monitoring and Validation Exercise

# Data Requirements at Different Levels of Decision Making



# Health information Tools for Different Levels of the Health System





# Attributes of HMIS

- Timeliness
- Accuracy
- Relevance
- Up-to-datedness
- Adequacy
- No Overloading
- Format Clarity
- No duplication
- Explicitness



# Strengths of HMIS



- In streamlining and standardizing of data records.
- In creation of an integrated warehouse
- In collecting data from different sources
- Conducting cross analysis.
- Rationalizing of reporting flows
- Supporting customized reporting.
- Indicator based analysis.
- Integration of various software applications such as GIS and Excel.
- Conducting data quality validation.

- HMIS does not offer  
“Ready - made” solution
- Each HMIS is  
“Tailor made” specific to an  
organization and levels within it

# HMIS– Issue



- Is there a policy existing for Health Information system?
- Does an organizational structure exist at the National level for HMIS?
- Functional linkages between sub-systems
- Capacity building-potential, activities and resources

- Is there a Fixed- frequency review of reports and records?
- How are reports made and who makes them?
- Is there a built in system for checking reliability of data generated at the lowest level ?

# HMIS– Purpose

Planning  
Implementation  
Monitoring  
Evaluation

Needed for

← **Information**

↑ **Purpose**

- Monitoring
- Control

- Cost
- Time
- Resources

# HMIS–Application should Provide Support to–

- Health Workers:
  - Understand health needs
  - Prioritizing clients
  - Estimate requirement
- Program Mangers:
  - Assess quality & Coverage
  - Allocate resources
  - Reduce wastage and duplication

- Policy Makers:
  - Assess cost-effectiveness
  - Decide content & mode of service delivery
  - Develop norms
    - Financial
    - Infrastructure
    - Staffing
    - Logistics

# Prerequisites of HMIS

- Existing formats, transmission system & channels, capacity of data handlers and analyzers and the resources (hard and soft) available.
- Exploring possibilities of additions and deletion of parameters
- Complimentary or contradictory nature of sub-systems of the System



# Components –Basic Management Process



- 5 components of the basic mgt. process in healthcare-
1. Establishing goals & Objective
  2. Estimate demand for services
  3. Allocate resources including manpower to meet demands
  4. Control quality
  5. Evaluate performance

# Establishing Goals & Objective

- Problem indicators
  - » Mortality
  - » morbidity
  - » Social indicators
  - » Economic data
  - » Health seeking behavior
- Data on services delivered by other community organizations
- Resources available



# Estimate Demand for Services

- Data on utilization
- Demographic data
- Community projections

# Allocate Resources

- Data on work force
- Financial information
- Capital requirements
- Short term demand forecasts



# Control Quality

- Output measure
- Quality control data
- Work sampling & measurement
- Medical audit

# Evaluate Performance

- Changes in problem indicators
- Cost benefit analysis
- Changes in community's capability to provide services



# HMIS- Components

- Identification
- Collection
- Classification
- Processing
- Communication
- Interpretation
- Storage
- Retrieval

# Factors Required to Develop and Implement HMIS:



- Strong political backing
- A culture that values and uses information
- Involving all levels in changes to HMIS
- Starting with improving the paper based system
- Ensuring the feedback loop is continuous and reliable





# Levels at Which We Need Information

- Point of entry of client into the System
- Point of Service
- Point of decision-making

# Use of Information

- National & State Ministries for
  - Assessing impact
  - Policy development
  - Financial allocations
- Health care professionals for
  - Treatment in Hospitals/ CHC/ PHC
  - Choosing alternatives between care lines

- Legal bodies
  - As documentary evidence of care
  - Protect interests of Health care professionals and patients
  
- Insurance companies for reimbursement of claims

# Information in Health Planning

- Information for assessing need
- Information for controlling utilization and standards (quality of services)
- Information for controlling deployment of resources
- Information for increasing effectiveness of services

# HMIS– Designing Technical Requirements



- Data collection instrument
  - Simple
  - Minimum
- Develop a data flow mechanism
  - Who generate
  - Who consolidate
  - Whom to be sent & How (mode)
  - Where & by whom to be analyzed
  - Whom to be reported
  - Frequency of compilation, Analysis & reporting

# Basic steps in Designing HMIS



- Determine organizational need for information
- Identify sources of information
- Decide on amount, form and frequency
- Select means of information communication & processing

# HMIS– Designing Information System



## Steps

- What data is needed
- Who generates in what form
- Quality
- Processing requirement
- Types of formats for reporting
- Frequency of reporting
- Data storage system
- Devices for storage
- What should be the channel for info. flow

- Determine organizational need for information
- Identify sources of information
- Decide on amount, form and frequency
- Select means of information communication & processing

# Designing HMIS

## 1. Design Requirements:

- Clarity of Objectives
- Awareness of information need
- Flexibility to change



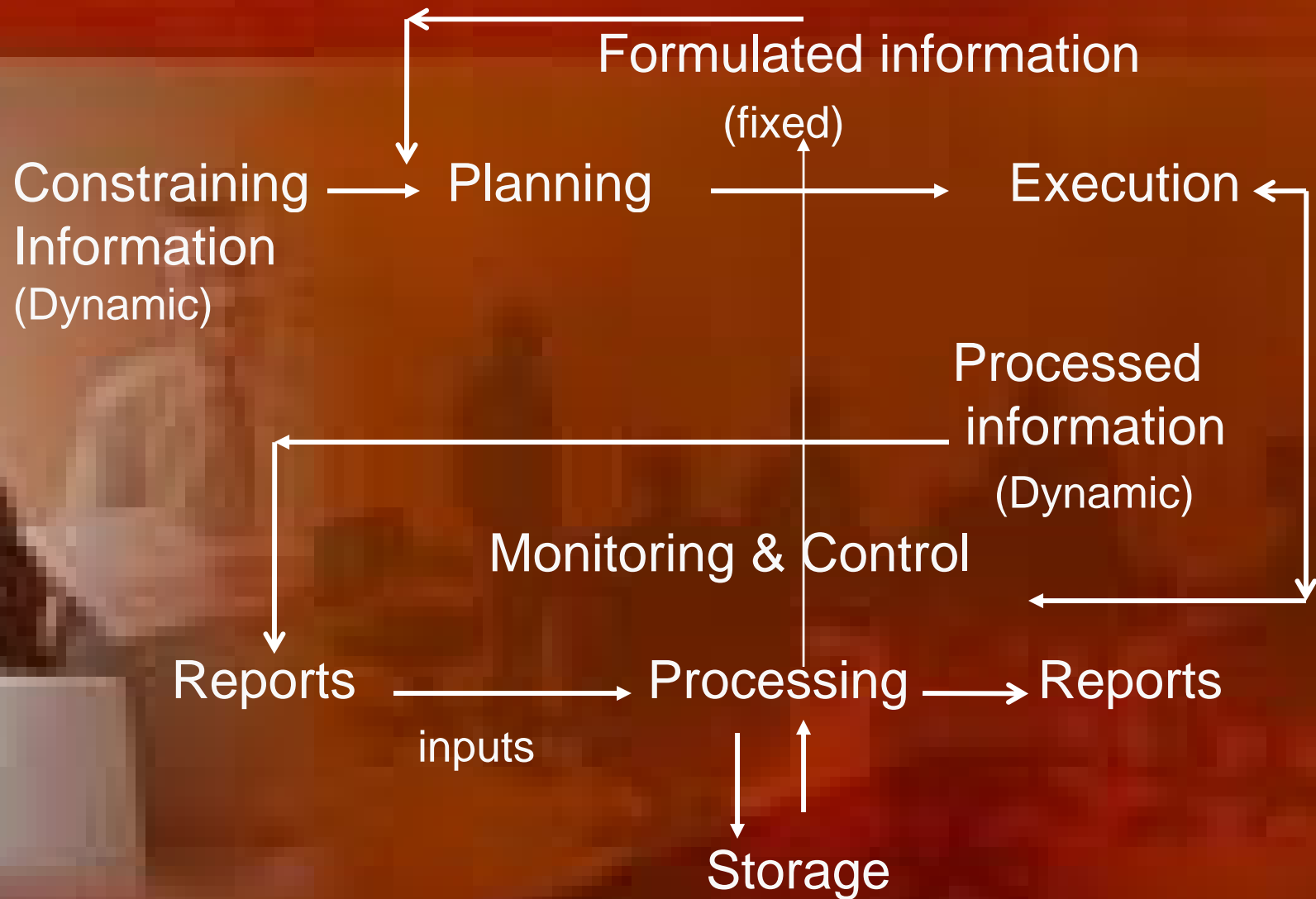
## 2. Considerations in information system design

- Identifying & listing of objectives and norms
- Identification of all decision points
- Determination of relative importance & priority of identified decisions
- Identifying information need for decision
- Identification of relationship among decision sets
- Specification of information system
- Installation
- Establishing a review mechanism

### 3. Information requirements - governed by

- Decision structure of Program
- Levels of decision making
- Questions to be answered
- Economics of information management, based on these requirements decision shall be taken regarding type of information, which could be-
  - Scientific & Technical (Related to problem & solution)
  - Situational (Program environment)
  - Programmatic (Intervention system)

# HMIS- Process





# Analyze the Data:

- By allotted ELA/Targets
- By comparison of last year progress
- By health indicators
- By annual action plan
- By Five Year plans

# HMIS– Problem Areas

- Unrealistic expectation of Managers
- Addressing to –”Report to higher levels” rather than convincing of benefits
- Too much information asked
- Poorly trained, Over worked staff, (30-40 % time in reporting)
- Information-selective & to handle out of pressure ad hoc exigencies
- Many reporting levels- Data lost

- Performance indicators
  - Shifting priorities within program
  - New additions- NO deletions
- Indicators- simply output oriented
- Program priorities & timeliness of information flow
- Retrieval
- Duplication
- NO periodic review
- NO feed back to initiate corrective measures



# HMIS Supports

- **Decision makers to:**
  - Detect and control emerging and endemic health problems
  - Monitor progress towards health goals,
  - Promote equity
- **Empowering individuals and communities with**
  - Timely and understandable health-related information
  - Drive improvements in quality of services

- **Supports Health Workers, in**
  - Understand health needs (based on approaches like CNAA)
  - Prioritizing clients (Estimate requirements (based on Demographic profile, morbidity profile, coverage and /or Expectations))
- **Support Program Mangers, for**
  - Assessing quality & Coverage
  - Allocating resources
  - Reducing wastage and duplication



- **Support Policy makers, to**
  - Assess cost-effectiveness
  - Decide content & mode of service delivery
  - Develop norms:
    - Financial
    - Infrastructure
    - Staffing
    - Logistics



# Reporting Formats under NRHM

Institutions	Reporting Format
Sub centre	Form No. 6
PHC	Form No. 7
CHC/FRU/UFWC	Form No. 8
Block level	Form No. 9 A
District level	Form No. 9



# Thank You

For more details log on to

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