ARCHITECTURE OF HEALTH MANAGEMENT INFORMATION SYSTEMS

Public Health Planning Priorities

What does the district planner need?

- 1. Information regarding case loads in each facility- so that facilities can be differentially funded.

- 2. Health status – disease and deaths- differentially- so that – resources (human and financial) can be invested accordingly.

- 3. quality of care in each facility- so that supervision and support can be sent in accordingly.

Existing Architecture

- National Center receives data on the national web-portal. All paper formats of submission are abolished

- Data entered would be district aggregated data and it would be on centrally standardized format.

- National Center uses this portal for its own analysis and use. No commitment to feedback.

- States and districts are welcome/encouraged to have their own back up systems for district level data analysis and use. DHIS-2 – supported by NHSRC is available as open source solution for this purpose for states who want it. Other states could use their own solutions

- States/Districts could customize their own forms and data requirements and applications- adding in whatever features they need – as long as they submit to one output which is the nationally standardized format.

Proposed Model Change- Plan A

1. National Web-Portal: Hosted on one mega- central server
2. All facilities enter data directly into central web-portal.
3. Web-portal generates district and block report.
4. Users log in to find reports of their district and blocks. Potentially facility/block users can go to site and analyze their data .

☐ Stated Purpose of Change: Need to enter facility level data- earlier it was need for pregnancy tracking on centralised applications.

☐ For pregnancy tracking and child tracking- a state level applications is proposed with other features like the national architecture.

Decentralized Model- Plan B

1. National Web-portal remains recipient of district level data **only.** National Web-Portal casts 15 national indicators.

2. National Office: – data definitions, standards, inter-operability standards. Technical authority: oversee and regulate conformance. Allows electronic channels for communication with state and district level applications.

3. Districts upload district level aggregated data, plus performance scores – on 70 indicators- quarterly/ monthly- standardized calculation of denominators. This could be displayed as a GIS nationally/at state level.

4. States have parallel applications on own state server. Current HMIS +facility level reports + GIS +HR Private sector registration/licensing also.

5. Facility level data entered on this. Whatever facility data required is sent up on request on earlier agreed formats- offline and as analyzed reports.

6. Users can generate and do analysis at facility level, district level and state level- at will- as well as generate displays. Use it for local planning.

Assessing Options: Plan A

		Point	Counter Point
1	Hosted on one mega- central server	Saves on costs. All states do not have capacity to manage own servers	As data load increases would slow down. Any problem occurs centrally would cripple entire system. Most states have capacity- others could have it hired for them.
2.	All facilities enter data directly into central web-portal.	Would ensure that data is not subsequently altered. Over-reporting/False reporting can be tracked down to facility and accountability . Server capacity can be expanded centrally.	Web-connectivity at facility level is very poor. In practice data entry is done at block or even district. Would slows down server if so many points of data entry start up. National center cannot do any facility level accountability. Can make no management or policy use of facility level data. Needless to get it up here.

Assessing Options- Plan A continued

		Point	Counter-Point.
3.	Web-portal generates district and block report.	Currently- web-portal does not generate district or block report. But potentially it can. Give us time to build these capacities.	Hasty introduction if states are asked to shift over before district report can be generated. Kills current options without putting in place alternative. Block reports cannot be generated because hierarchy of which facilities go to which blocks has not be determined.
4	Users log in to find reports of their district and blocks. Potentially facility/block users can go to site and analyze their data	Give us time to build these capacities… SAS is available for users to access	Because of complexity of getting appropriate denominators block and facility level analysis cannot be done centrally. Paper records would remain at facility level and all analysis would be manual or draw down data from web-portal into a local applications for analysis. Using SAS as user defined analysis has not been possible, even for dts and national office!!!

Assessing Options- Plan A- and further..

5	Customisation for state and districts need	Need not be allowed. Many extra data elements sought needlessly	In principle decentralisation means permitting such customisation. There are real needs for customisation. Blocks and districts must be encouraged to use more appropriate management indicators and the applications must enable such use.
6.	Integration with future applications- HR, Hospital information systems.	May be possible in future models. Can be done offline	Cannot be done. Web-portal is already stretched. Diversity of HR applications/needs, hospital systems diversity/needs, pvt sector monitoring/needs. Level of development across states varies. Better to insist on data standards and interoperability standards and build applications at center that can talk to other systems- then shut down existing ones for an uncertain future.

Assessing Options- Plan B

	Proposal	Point	Counter-Point
1.	National Web-portal remains recipient of district level data **only.** National Web-Portal casts 15 national indicators.	This is already achieved. We can focus on quality and improve it. We know now the problems with quality and must address this. Facility level data entry is no guarantee of quality.	Without seeing Facility level data, we cannot ensure quality.
2	National Office: – data definitions, standards, inter-operability standards. Technical authority: oversee and regulate conformance. Allows electronic channels for communication with state and district level applications.	Enables states to develop their own systems; national systems can talk to state systems and with each other. IDSP-NVBDCP –HMIS- E-mamta types can also get integrated: Already initiatives in developing standards – esp. with knowledge commission - Can be built on.	National Web-portal enforces some standards. Rest is not M&E divisions concern- it happens somewhere else.

Assessing Options- Plan B- continued

	Proposal	Point	Counter Point.
3	Districts send aggregated data, plus performance scores on 70 indicators-	Encourages districts/states to see performance. Enables national HQ to see performance better than current level of use.	We need to get raw data and calculate performance ourselves. If states send performance scores trend to upgrade/falsify scores is more. Safer if M&E does it here. They would see their data only when we have analysed it.
4.	States have parallel applications on own state server. Current HMIS +facility level reports + GIS +HR Private sector registration/licensing also.	Enables faster server functioning. Enables much wider development of health informatics	States need to have capacity to procure and manage servers. NIC support and servers often problematic- especially their firewall policy. Why should states get into so much informatics- why not limit themselves to what we ask- given their track record.

Assessing Options- Plan B- and further…

		Point	Counter point
5	Facility level data entered on this. Whatever facility data required is sent up on request on earlier agreed formats- offline and as analyzed reports.	Not credible that national level will analyse down to facility level- still needs to get district analysis going better. Why facility data on 250 elements- take on 10 or 15 offline.	We have such problems in getting facility level data when we need. And verifying state claims. Without seeing facility data we cannot verify and they do not send it when we need it.
6.	Users can generate and do analysis at facility level, district level and state level- at will- as well as generate displays. Use it for local planning	This is whole purpose and pivot of HMIS. Without use in local planning- it is a waste. Policy purposes better served by surveys- vastness of reporting areas and issues	Accountability is the main purpose. Local use a by-product. The act of reporting on all 250 builds accountablity.Local capacity for use limited. With help of technical teams at national level we would analyse and send down information.

An ethnographic Perspective of plan A (accountability perspective??)

- Implicitly the system is meant to collect data and send it up…as an act of holding themselves accountable.

- The requirement of reporting relationships and flow of data mirrors and reinforces the chain of command. The data elements are a reminder of functions to be carried out and accountability for this.

- When data flows up a team of statisticians and demographers would interpret the data- and tell those below the meaning of their data.

- The M&E staff – are in a privileged position- they give meaning to numbers and pronounce on programme success and failure. They are a separate cadre and this makes them an independent source. Statisticians at one time, now IT persons giving them competition.

- The central eye of the top administrator must notionally see all that happens below. And everyone below is aligned to that eye and has a relationship to it. The act of reporting and being reported to is what gives meaning. The actual use of information is a by-product. May happen, may not.

- When you extend the gaze of this central eye to facilities and even to individuals- pregnant woman, every child then you strengthen this power.

(but typically in panopticons the central tower is never manned properly and everyone is resisting/hiding from the gaze)

An ethnographic perspective of plan B (empowerment perspective??)

- Districts and blocks must be enabled/empowered to make their own decisions. In terms of allocation of resources- human, financial, technical AND in terms of strengthening monitoring and providing support.

- For which they need information- as quickly as possible and as user-friendly for above purpose as possible.

- As a by-product of the above process- some information that higher levels need can be sent up to state and national level.

- States need information to make resource allocations (where to invest more) and policy decisions (whether programme designs are working well, are new schemes needed) and on governance (whether district leaderships need change). For this they need information on districts and to block level. Facility level is not useful

- National level needs information to make resource allocations and policy decisions. Even on governance they can do little- but some district understanding helps them to help states on governance issues.

Architecture of HMIS

HMIS architecture is shaped by

□ Perspectives of stakeholders- national administrators, state administrators, development partners on how HMIS actually works- their programme theory and their perspectives …… and the interests of vendors

□ There are large areas of agreement between the two approaches- and these can be built upon… but the problem of trying to fuse both are:

- ▪ More information sent above, confuses and drowns the useful information.
- ▪ Trying to get facilities to become accountable, Undermines the other uses of HMIS.
- ▪ Perspective A is not willing to co-exist with perspective B. Wants to create only source of information on flow ;one authority, one interpretation.
- ▪ (Unfortunately?) As districts get empowered, states and national authorities could become accountable to them- the order of things gets upset.

Risks and Assumptions of plan B

- How is ownership and indigenous capacities built around DHIS2. Are we in a sole vendor situation with HISP- what are the risks and assumptions of these.

- What are strengths and weaknesses of DHIS2 and existing other software systems in use. What is the direction of their development.

- Do we need to build multiple players/service providers for support in an open source environment.

- What are other options available: other than DHIS-GIS, In iHRIS, in open MRS, in m-health. Do we need to look further or is the WHO an adequate authority/back up./

- What are the mechanisms for procuring, costing, open source solutions, especially within a government framework.

At the cross roads…

- There are no easy answers…..

- But one has to work to build understanding.

- Meanwhile find space for parallel systems- one sub-serving the accountability function and the other sub-serving the use of information function. The nature of duplication could differ: Assam- does analysis off line, karnataka wants down load from web-portal and analysis, and still others would operate both, entering every facility data twice….

Thank You