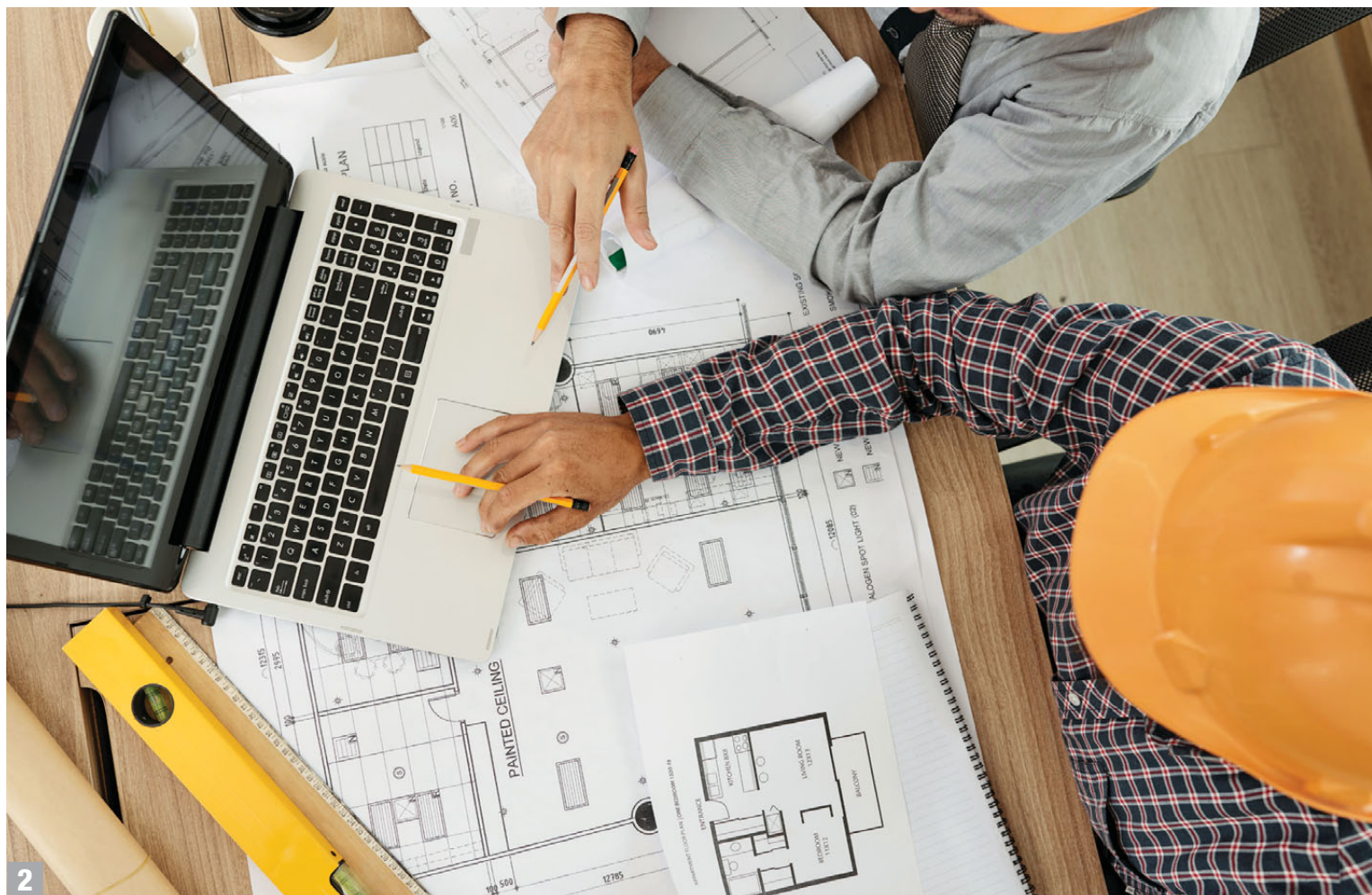




Manu Malhotra
Director, RSMS
Architects

2. The roll out of Ayushman Bharat is compelling hospitals to re-look at current space designs and become more nimble and cost efficient.

munity based health insurance schemes, resulting in larger requirements of general wards over single and twin share rooms. Hospitals of the future will not only require lesser number of beds but also will need lesser people to provide requisite services. Facilities are expensive and will become more so in the future as real estate costs are escalating. Over the years, designers have tried to maximise the future planning option by placing the essential core elements together, so that the rest of the floor space is contiguous and open.

How flexibility of healthcare space has evolved? Says Harish Pillai, CEO - Aster Hospitals and Clinics, India, Aster DM Healthcare, "Historically, flexibility in healthcare design evolved out of compulsion. Non adaptability brings along a tremendous risk of creating 'white elephants' and making projects go sick. Scarcity of capital and its efficient deployment also pushed the need to adopt flexibility." The massive changes in

regulatory frameworks especially in the Affordable Care Act in the US have acted as a catalyst to push providers to adapt quickly or lose out margins. Likewise in India, the roll out of 'Ayushman Bharat' is compelling to re-look at current space designs and become more nimble and cost efficient.

According to Arun Mathur, GM-Projects, NH Healthcare Design Consultancy Services, "The 'flexible' design logic has not been ahead and on a pro-active path. Rather it has been reactive with a lag, and tried to keep up with the demand for change." On reason is that the requirement for flexibility also necessitates redundancy in design solutions, which might or might-not be the most economical solutions. So when the decision making is purely based on economising, flexibility is often cast aside. However, high weightage is being given to energy efficient and energy saving solutions, which in the process has been used by designers to build in the flexibility and are now per-

ceived as 'good engineering practices'.

Key elements in design flexibility

1. A proper architectural study: According to Rajesh Sivan, Group Head - Projects, Asia Healthcare Holdings, "A hospital design can be made flexible by incorporating different aspects of flexibility i.e. adaptability, convertibility and expandability. With the proper architectural study, like suitable structural grid, floor to floor heights, strategically located vertical transportation system, interstitial spaces, location and proper sizing of electrical, mechanical, plumbing and other hospital services, hospital buildings can be made flexible to manage the future uncertainties and to adapt future demands of healthcare functions."

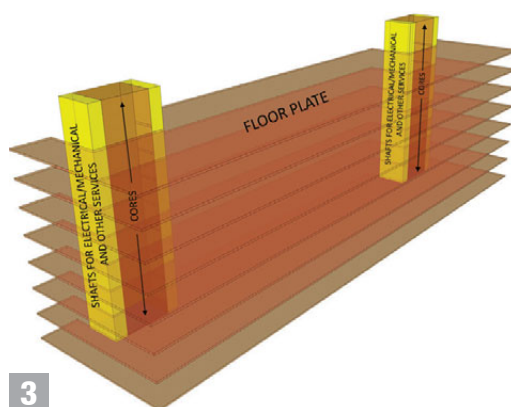
2. Design of imaging departments: Radiology is one of the most quickly changing hospital departments. It replaces its equipment frequently in order to keep up with the latest technology. So designers are slowly moving towards a more flexible radiology department which can cater to upgrading of technology or adding more spaces when required. According to Manu Malhotra, Director, RSMS Architects, "Even during new construction, the radiology department often hesitates to commit to a particular piece of equipment because the technology will undoubtedly change, even before construction is over. This hesitation is even more prevalent on large projects, which could take several years to build after the design document is finished."

So, firstly, one must design the structural system flexible enough for any kind of potential addition of weight and multiple slab penetrations for future equipment. Secondly, one must consider redundancies in cooling and electrical power in order to prevent limitation of future options. "Of course, all these could mean a higher price tag, but it could also mean future savings when considering the speed of the ad-

THE RULES OF MODULARITY

In rethinking the healthcare planning process, one must follow the rules of modularity in this order- Standardise; Modular and Prefabricate, says Manu Malhotra, Director, RSMS Architects. First, one needs to standardise building components to reduce variation whenever possible and appropriate. In addition to being easier to prefabricate, standard design elements—such as a typical exam room—have the advantage of ensuring quality by eliminating unintentional deviation from best practice. "We have developed standard room types based on a growing body of evidence-based research in order to create system that promotes innovation through a process of continuous improvement," says Manu.

Once the parts are standardised, one must intentionally plan on how individual parts shall come together in a modular, systematised way. Finally, standardised modular components should be prefabricated. This requires collaboration with construction partners and vendors, and we make sure that it is incorporated in the early design stages. Prefabricated components (such as interior wall partitions or entire rooms) are built off-site at the same time as on-site construction (such as site work and foundations) is progressing and then assembled on-site. This even reduces cost by saving time and the associated general conditions of managing a construction site. Many elements are commonly prefabricated, encompassing everything from interior wall panels to entire rooms, MEP racks, exterior envelope, and structural steel.



Arun Mathur,
GM- Projects, NH
Healthcare Design
Consultancy
services

vancement of medical technology and the cost of renovating," says Manu.

3. Building core elements: Future planning for flexibility could also be maximised by placing permanent building elements, such as the stairs, elevators, electrical and tel/data rooms in the right location.

3. Planning of services shaft along with cores.