



# Kiwi Hospitals: “Future-Looking” Principles for a Hospital Maturity Model

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## ABSTRACT

Hospitals are, for most human beings, the more visible, historical and futuristic, dramatic and hopeful, side of healthcare. Most hospitals today face criticisms for being too complex to navigate, too risky for elderly and frail people due to nosocomial infections and intolerably high rates of medical error. While seeing the future of hospitals is not possible it is likely that it will mean an ever-incensing use of technology. Changes in hospitals and their internal dynamic have a lot to do with digital health understood in a broader sense. Hospitals are “knowledge organizations”. To ensure the best response to the aspirations and raising challenges successful hospitals of the future will be those that combine four elements in an equilibrium. They need to be Knowledgeable, Intelligent, Wise and Interoperable. Managers will need to be more capable of funding the right investments to get to KIWI hospitals. The suggested KIWI framework can be applied as future-looking maturity model principles. The target is a future proof hospital capable of solving old problems and be ready for resilient responses, such as the ones 2020 has shown the world hospitals need and are needed for.



EDITORIAL



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Hospitals are, for most human beings, the more visible, historical and futuristic, dramatic and hopeful, side of healthcare. From large, multi-building facilities with academic as well as advanced research components, to small district or local homecare where a proximity-type healthcare can be provided. Most hospitals today face criticisms for being too complex to navigate, too risky for elderly and frail people due to nosocomial infections and intolerably high rates of medical error. They are accused of being too inhuman, cool and frightening, too technical and difficult to reach due to financial or complex referencing systems.

Many good examples of large and small institutions around the world which are making significant steps to eliminate these causes of criticism exist. They range from Patch Adams' type of work [1] to the rigorous "Clinical Governance" initiatives in the UK [2]. From highly digital Kaiser Permanente or artificial intelligence (AI) hospital projects funded by the European Commission, to the extraordinary example of Toyota Production System applied to the Ng Teng Fong General Hospital in Singapore, a prime exemplar of lean in healthcare [3]. These illustrate different developments for hospitals. While seeing the future is not possible it is likely that it will mean an intense use of digital health. I do not mean we cannot foresee physical appearance, size, or even what medical specialities will prevail. I mean their organizational culture and their strategies to deal with workforce, information, facilities and equipment, and, ultimately, care processes. Changes in these aspects of hospitals and their internal dynamic have a lot to do with digital health understood in a broader sense. If one could put this "essential spirit" into one word, the difference between ancient monastery hospices and current hospitals would be: **Science**. Similarly, between today's hospital institutions, albeit their heterogeneity, and future hospitals this "essential spirit" will be they possess of **Hybrid Intelligence and Wisdom**.

Hospitals are, or should resemble, Nonaka's "knowledge organizations" [4, 5] as they are human-resource intensive spaces where most of what happens depends on highly skilled doctors, nurses, pharmacists and all other professionals. Yet few are structured according to clinical pathways. Hospitals offer and deliver knowledge intensive services such as an eye cataract surgery or a brain electro-implant therapy. They must be quality focused, and error cognizant and avoidant or adverse. Only by doing so will they improve, gain and regain citizens' trust. This remains difficult in most organizations, but new times have to bring about change if we are to advance into Digital Healthcare Systems an opinion I have expressed previously [6].

Intelligence is no longer a human exclusive, as Humans have set on a serious journey to create AI systems and agents. Wisdom is a long-time human

exclusive attainment. It is now critical to balance incredible technological possibilities that bend the limits of ethics, humanity, and dignity. The question of what organizational wisdom is and how can it be usefully conceived need to be answered. Multiple information systems, and the need for interconnected organizations and interdependent care process, remind "the hospital" that it is often not more than a multitude of "smaller, often divided" mini-hospitals or departments, in an ecosystem of regional, national and now, more than ever, global public health interdependency. To ensure the best response to the aspirations and raising challenges hospitals of the future are those that combine four elements in an equilibrium. They need to be Knowledgeable, Intelligent, Wise, and Interoperable.

**Knowledgeable** – Hospitals will need to increasingly operate and require the highest degrees of science and technology combined with practical expertise which is still required. The usage of Clinical Decision Support tools as well as extensive clinical pathways structuring of services will be paramount.

**Intelligent** – Usage of AI in basic medicine procedures (in robotic surgery; or in imaging or genetics, for example), but also in Intelligent Hospital Management systems. This will require a revision of how to explore and mingle the Natural Intelligence (NI) of existing health staff.

**Wise** – Only people can be wise. Wisdom is still a human prerogative yet trust and ethics are needed at the "deeper and transversal levels" of the organization. Trust and Digital Ethics reinforcing structures and processes will need to become their core competencies, as technical and scientific potential to do harm or "bad" is immensely increasing.

**Interoperable** – A term often associated with information technology (IT). While IT interoperability, standards use, and Big Data spaces for exploiting the value of secondary and tertiary data use remain necessary and difficult. Interprofessional teams and inter-organizational Virtual Competence Centre are key features of KIWI hospitals in their struggle to inter-operate healthcare inside and inside-out.

Managers will need to be more capable of funding the right investments to get to KIWI hospitals. Not just beds and drugs, wages and surgical material. Intangible assets like culture development, reflection processes, excellence and performance appraisal systems, just to name a few, will be essential to attain the level of KIWI maturity needed for hospitals in the future.

To an organization it is important to **consider continuous organizational improvement as a key factor of core business**, and it has been shown that an organizational maturity framework would be helpful in creating a more objective and systematic approach to an improvement culture and at the same time utilizing a fully consistent process [7]. The KIWI framework

can be applied as a future-looking maturity model. In several knowledge areas the identification and creation of maturity models (for example: maturity grids and capability maturity model (CMM) [8]) has been very useful. They allow the establishment of a set of evaluation tools, methods and procedures regarding good management of organizations but also whether they are “MATURE” for something. They serve to highlight their weaknesses, establish opportunities to reach improvements in certain areas, which can become to a strength and not a liability [9]. The target is a future proof hospital capable of solving problems that has made us lose human lives over the last 60 years due to medical error [10], misdiagnose or lack of knowledge retention, but also be ready for resilient responses, such as the ones 2020 has shown the world hospitals need and are needed for.

## COMPETING INTERESTS

The author has no competing interests to declare.

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