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Transforming Through Data

STRATEGY - IMPLEMENTATION - STANDARDS - AI - CYBERSECURITY

**EUropean Federation for CAncer IMages – Using
Technology to Improve Cancer Care**

Luis Martí-Bonmatí

**Healthcare's Digital Transformation with HIMSS:
Challenges, Innovations, and the Road Ahead**

Rob Havasy

Rookie Mistakes in AI Transition for Healthcare

Hugues Brat

**How Change Management Activates Digital
Transformation in Healthcare**

Alan Zettelmann

José A Cano

**Accelerating Healthcare Innovation: How to Harness
the Full Potential of Digital Solutions**

Thierry Godelle

**Unlocking the Potential of AI in the NHS: A Path
Forward**

Jenny Lewis



Accelerating Healthcare Innovation: How to Harness the Full Potential of Digital Solutions

Exploring the transformative potential of user-centric digital solutions in healthcare, case studies showcase how these innovations drive improved patient outcomes, operational efficiency, and accessibility in healthcare delivery and management.

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key points

- Prioritising user needs and seamless integration into existing workflows is critical to drive successful adoption and deliver transformation in healthcare.
- Simplifying complexity and streamlining workflows to optimise efficiency and enhance user experience showcases the power of simplicity in driving technological advancements.
- Digital solutions must generate their own effectiveness data, validating their benefits and facilitating widespread adoption, emphasising the importance of evidence-driven adoption:
- Strategic partnerships and a commitment to usability and user experience drive successful product development and adoption, demonstrating how collaborative efforts and user-centric focus are essential for driving healthcare transformation.
- Innovations democratise access to advanced healthcare tools, promising improved patient care and outcomes across diverse healthcare settings.

In the rapidly evolving landscape of healthcare, technological advancements stand as catalysts for transformative change. Among these innovations, digital solutions emerge as pivotal drivers that have the potential to dramatically improve the delivery of care from clinical, operational and financial points of view. From streamlining administrative processes to optimising patient care pathways, digital solutions offer unprecedented opportunities for efficiency, accuracy, and accessibility. As a specialised healthcare consultant, Thierry Godelle witnessed firsthand the profound impact of these technologies on the industry and is in a privileged position to offer insights on how embracing

technological and digital solutions accelerates innovation in healthcare towards a future defined by improved patient outcomes and enhanced quality of care. Thierry Godelle's experience from recent projects ranges from the implementation of digital monitoring systems in hospital pharmacies to ensure safe medication compounding, to the utilisation of robotisation to get complete a patient skin complete digital representation to improve dermatology follow-up and improve diagnostic, and to the development of advanced instruments for measuring nanoparticle size to engineer effective nanomedicines.



Putting Users First: Empowering Healthcare Through User-Centric Digital Solutions

Digital transformation projects in healthcare often encounter pitfalls leading to failure. These failures stem from various causes, including inadequate user engagement, poor alignment with existing workflows, and insufficient consideration of user needs. However, these setbacks have served as valuable lessons for innovators. They've realised the importance of developing user-centred digital solutions tailored to address pressing healthcare challenges. Today, there's a concerted effort to design products that seamlessly integrate into existing practices while significantly enhancing them. Ultimately, failure in digital transformation projects doesn't result from the technology itself, but rather from the design of

naturally, minimising the need for extensive change management efforts.

Extreme attention was given to the workflow to ensure that the transition to Drugcam was as seamless as possible. The first step involved simplifying the workflow, a task that proved crucial yet challenging. Simplification necessitates making trade-offs, as famously stated by Einstein, "Everything should be made as simple as possible, but not simpler". Eureka understood the importance of focusing on the critical steps of chemotherapy compounding. Along the way, they made the strategic decision to abandon monitoring certain steps if it risked alienating users rather than assisting them. This approach ensured that the solution added substantial value without unnecessary complexity.

From streamlining administrative processes to optimising patient care pathways, digital solutions offer unprecedented opportunities for efficiency, accuracy, and accessibility

the product. By prioritising user needs and workflow integration, innovators can mitigate the risk of failure and drive the successful adoption of digital solutions in healthcare.

The importance of user-centricity in healthcare innovation is vividly illustrated by the story of Eureka and its Drugcam solution for safe chemotherapy compounding in hospital central pharmacies. Founded by Pharmacist Benoît Le Franc, Eureka's journey began with a keen observation of the challenges faced in his own department. Benoît Le Franc recognised that the conventional method of double visual control was prone to errors, jeopardising patient safety and taking a toll on staff morale due to heightened stress levels. The Drugcam solution was conceptualised with the primary objective of addressing these critical issues. By placing the needs and experiences of pharmacists and technicians at the forefront of product development, Eureka ensured that Drugcam not only enhanced patient safety but also improved workflow efficiency and staff well-being. This user-centred approach yielded tangible benefits and facilitated the implementation process at new sites, as user engagement came

Simplifying Workflows with AI Integration

The second step involved making the workflow as intuitive as possible, minimising clicks and manual interventions. Eureka prioritised the seamless integration of AI and video recognition technology within Drugcam, leveraging these advancements to enhance the solution's speed, intuitiveness, and practicality. By harnessing the power of AI and video recognition, Drugcam was able to streamline the compounding process monitoring, reducing the need for manual interventions and clicks. This technological integration not only optimised workflow efficiency but also simplified the user experience, making Drugcam a practical and user-friendly solution for pharmacy staff. In essence, the focus was on simplicity, achieved through the seamless incorporation of advanced technologies into the workflow.

Leveraging Data Insights for Evidence-Driven Adoption

Last but not least, Drugcam, like other relevant digital solutions, produces its own effectiveness evidence

through the data it generates and makes available to its users. This aspect is pivotal in the virtuous circle of digital transformation. By leveraging the data insights provided by Drugcam, hospital pharmacists can demonstrate the tangible benefits of the solution, ranging from improved medication safety to reduced product and related financial losses. This evidence not only validates the effectiveness of Drugcam but also simplifies the process of convincing future customers of its ROI. In essence, the ability of digital solutions to generate and showcase their own effectiveness data serves as a cornerstone in driving widespread adoption and continuous improvement within the healthcare ecosystem, particularly as healthcare providers face financial constraints; the capacity for a digital solution to pay for itself significantly facilitates its adoption from a budgetary perspective.

in many countries. SquareMind has developed an innovative full-body imaging solution scheduled for the European market in 2024. It features an automated system capable of digitising a patient's entire skin with a definition comparable to that of a dermatoscope, the currently utilised tool, in just 3 to 5 minutes. A robot equipped with a high-resolution camera navigates around the patient's body, enabling complete, automated image acquisition. The device is compact, user-friendly, manoeuvrable, and can be operated by a medical assistant to initiate a scan. The potential for healthcare centres is enormous: significant workflow efficiencies through automation, and more accessible care through tele-dermatology thanks to the digitisation of the skin map. One can easily imagine patients getting scanned in 5 minutes, with images being reviewed by an expert, unlocking workflow efficiency but also democratising access to care in physician-deprived areas.

Innovations must seamlessly integrate into existing workflows or offer substantial operational gains that make them indispensable, ensuring their widespread adoption

Digital Skin Mapping Innovation Improves Accessibility and Efficiency for Dermatology

The demand for skin exams is skyrocketing due to ageing populations and increased sun exposure, while the number of experts remains stagnant, resulting in waiting times of several months to a year. Dermatology faces accessibility and efficiency challenges, all the more given that the practice remains largely manual-intensive, with today's standard of care remaining a handheld magnifier invented 30 years ago. When compared to other medical verticals, dermatology is still prone to digitisation, in this very case, high-resolution scans for efficient longitudinal patient follow-up and the deployment of AI in clinical routines as a second pair of eyes. This issue is notable considering that 80% of melanomas develop on healthy skin and not from existing moles.

SquareMind, an innovative company in dermatology, stepped up to the plate to tackle this crisis prevalent

The implementation of SquareMind's digital skin mapping capability offers a self-sustaining solution that effectively "pays for itself" over time. By boosting throughput, it allows centres to increase their revenues, creating a compelling incentive to adopt the solution. SquareMind's ability to alleviate a critical bottleneck not only improves patient care but also generates tangible financial benefits, ensuring a rapid return on investment for healthcare facilities. Part of SquareMind's offered solution is an initial AI companion that will highlight new and modified moles over time, proving useful for follow-ups. While it does not provide a diagnosis or identify the nature of the change, this supplementary information will be a welcome addition to patient care.

In the long run, SquareMind aims to demonstrate that its digitised skin maps of the body will offer a more comprehensive context for AI to analyse lesions with high sensitivity and specificity. Instead of analysing potential lesions in isolation based solely on the lesion pattern using a data bank of annotated patterns, SquareMind's approach considers the broader context



provided by the entire skin surface, akin to a physician's typical assessment. For instance, by integrating information such as the temporality of the lesion or its shape in the surrounding environment, the AI algorithm will likely classify lesions more sensibly and precisely.

SquareMind's iterative approach, beginning with workflow simplification and then gradually enhancing skin assessments with a 2nd pair of eyes, serves as a compelling illustration of the evolution of healthcare technological solutions; by prioritising user needs and addressing organisational bottlenecks, the company ensures its adoptability and effectiveness within healthcare institutions, while gradually developing a suite of tools for improved patient care. SquareMind exemplifies the transformative impact of upcoming healthcare technological solutions, promising a future where innovation drives accessibility, efficiency, and excellence in healthcare for all.

Emerging Technologies Must Address Unmet Needs to Secure Successful Adoption

It is crucial to recognise that breakthrough healthcare technological innovations can also emerge from the technology itself. Some entrepreneurs possess a remarkable ability to identify novel technologies and uncover and delineate the problems they can solve, transforming them into effective solutions. Reflecting on the rapid evolution of technology, it's remarkable to consider that just a couple of decades ago, the concept of a smartphone seemed unnecessary. Yet, the subsequent revolution it brought to our daily lives underscores the potential for innovation to arise from unexpected sources. Similarly, within the healthcare sector, entrepreneurs adept at harnessing emerging technologies have the opportunity to reshape the landscape by addressing unmet needs and unlocking new possibilities for enhanced patient care and outcomes.

For these technological innovations to gain successful adoption among healthcare practitioners, they must undergo a rigorous process. Firstly, they must identify unmet needs within the healthcare landscape, addressing significant challenges that warrant attention and engagement from users. These needs must be substantial enough to ensure sustained user engagement and avoid potential derailment. Additionally, the innovations must seamlessly integrate into existing workflows or offer substantial operational gains that

make them indispensable, ensuring their widespread adoption. Moreover, they should produce their own data as evidence of their added value, validating their effectiveness and benefits. These essential product development and design steps are increasingly recognised as indispensable, laying the foundation for the successful implementation and adoption of healthcare technological innovations.

Innovation Must Commit to Usability and User Experience

Nanoscale Metrix, founded by serial entrepreneur Gérard Meunier, introduces the TaylorSizer solution, pioneering nanoparticle size distribution measurement for particles as minute as 0.5 nm. Traditional instruments capable of assessing particles below 50 nm are typically expensive and complex to operate, limiting accessibility. Nanoscale Metrix seeks to revolutionise this landscape by democratising ultra-small nanoparticle sizing, making it widely accessible in both healthcare research and clinical settings. This breakthrough holds immense promise for advancing the development and evaluation of nanomedicines.

Gérard Meunier and his team recognise that the successful adoption of the Taylorsizer solution hinges on its ability to address real-world challenges and deliver tangible value to users. To achieve this, they have forged strategic partnerships with key players in pharmacology and bioengineering, tapping into their expertise and domain knowledge. These collaborations provide invaluable insights into the diverse applications and potential benefits of Taylorsizer across various healthcare settings.

By immersing themselves in these partnerships, the product development team gains a deep understanding of the unique needs and requirements of their target users. They leverage this knowledge to fine-tune the features and functionalities of Taylorsizer, ensuring it aligns seamlessly with existing workflows and addresses specific pain points encountered by researchers and clinicians.

Moreover, the emphasis on optimising the user interface reflects a commitment to usability and user experience. Recognising that complex instrumentation can often be daunting to operate, the team strives to simplify the user interface, making it intuitive and user-friendly. This user-centric approach not only enhances the adoption and acceptance of Taylorsizer but also

maximises its impact by empowering users to leverage its capabilities effectively.

Overall, these strategic partnerships and the iterative product development process underscore Nanoscale Metrix's experience in delivering a solution that not only meets but exceeds the needs and expectations of the healthcare community.

Driving Healthcare Transformation: Case Studies Support Digital Innovation

In conclusion, the examples of Drugcam, SquareMind, and Taylorsizer underscore the transformative power of digital and technological solutions in accelerating healthcare transformation. Each product exemplifies how companies are delivering innovations tailored to meet the evolving needs of healthcare practitioners and patients alike.

Drugcam's user-centric approach revolutionises chemotherapy compounding, streamlining workflow processes and enhancing patient safety. By prioritising user needs and integrating seamlessly into existing practices, Drugcam demonstrates how digital solutions can mitigate errors and improve outcomes while reducing stress levels among healthcare professionals.

Similarly, SquareMind's innovative robotic device revolutionises dermatologic follow-up procedures,

offering a comprehensive solution for mapping and digitising the patient's skin surface. By addressing a critical user issue and leveraging advanced technology, SquareMind enhances diagnostic capabilities and streamlines clinical workflows, ultimately improving patient care and outcomes.

Lastly, Taylorsizer exemplifies how companies are harnessing emerging technologies to democratise access to critical healthcare tools. By partnering with industry and clinical research labs, Nanoscale Metrix ensures that Taylorsizer meets the specific needs of pharmacology and bioengineering, optimising its features and user interface for seamless integration into healthcare R&D and clinical settings.

Collectively, these examples showcase how companies are delivering digital and technological solutions that are increasingly suited to accelerate healthcare transformation. By focusing on user needs, optimising workflow integration, and harnessing the power of emerging technologies, these innovations pave the way for a future of improved efficiency, efficacy, and accessibility in healthcare delivery and management.

Conflict of Interest

None.