

Quality by Design (QbD) for Software Defined Systems

Human-Machine-Soft-Systems (HMSS) Capability Mapping

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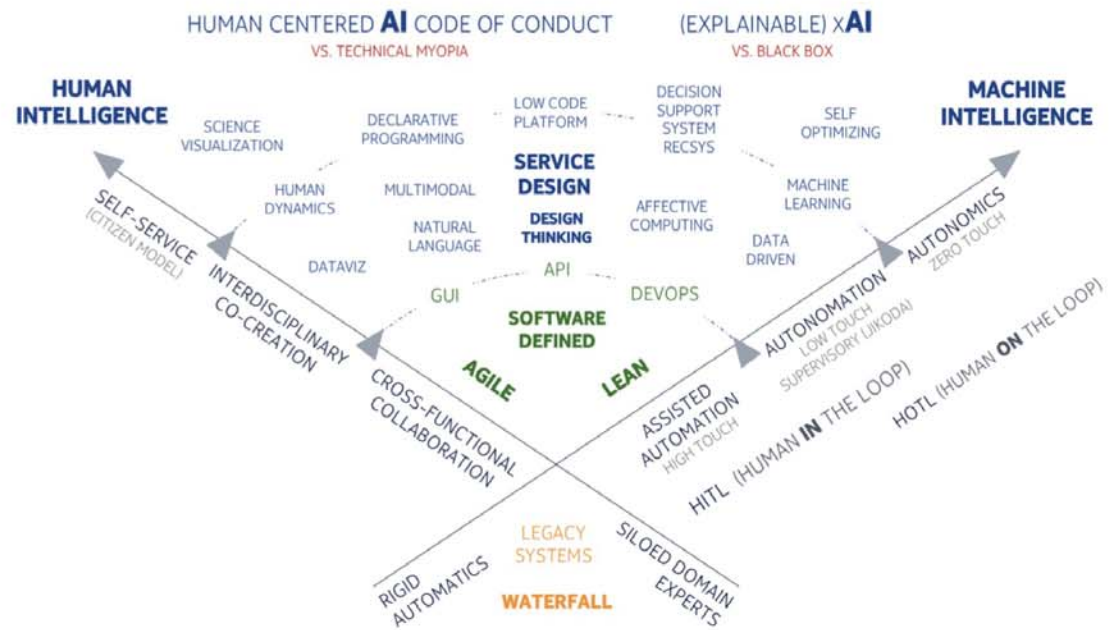
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The more sophisticated automation becomes, the more obvious the criticality of the human factor in both consumer and enterprise environments. And, in any case, customer acceptance and adoption criteria remain Quality's litmus test for emerging technologies.

Digitalization is fostering (a) XaaS, (b) Self-Service, (c) the Shared Economy and the (d) Maker Movement. All elevate human involvement and drive the push for opening and democratizing technologies. These make (e) citizen science and citizen developers shape the next generation prosumers at mass market scale.

Digital Transformation initiatives embracing the above allow (f) nimbler enterprise teams to operate at far greater scale, scope and speed, and shift focus from routine operations to dynamic value creation coupled with extreme efficiencies.

This entails (g) interdisciplinary workstyles and collaborative organizational behaviors that include (h) customer co-creation models. In this new context, humans remain (i) the ultimate critical element in system reliability and safety. Left shifting Quality by Design (QbD) prioritizes Human-Centered-Design tools and processes to deliver high performance workforce automation systems.



The goal of furthering machine intelligence is to make humans smarter: the opposite becomes self-defeating technical myopia waiting to happen. This map can be customized to assess capability levels.

Quality by Design (QbD) for Software Defined Systems Ops Excellence & Human Centered Design (HCD) Principles

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Cost-effective Lean Ops systems intertwine analytics, automation, programmability and flexible systems integration.

All optimized for dynamic behaviors given Soft System's perpetual motion. This means designing for-ever rapid and seamless reconfigurability.

Operational Excellence dictates system-wide as well as subsystem level visualization, and a combination of centralized & distributed closed loop controls under user friendly operational modes.



Productivity calls for streamlining operations so that (a) waste can be eliminated & prevented, and (b) value based tasks can be performed effortlessly, in less steps, at speed & without error. High performance behaviors and sustainable competitiveness also call for the ability to (c) experiment and create new capabilities, as well as leveraging (d) process mining for customer journeys & value stream mapping (CJM & VSM) to continuously optimize them and guarantee service levels.

Service Operations Centers (SOC) are, therefore, best equipped with Experiential Decision Support Systems (DSS) featuring (d) collaborative filtering, (e) actionable data stories conveying hindsight, insight & foresight and (f) adaptive cybernetics. Advanced visualization for both (f) intuitive & highly abstracted infographics and (g) scientific views is of the essence.

Quality is best addressed as a human experience, which determines (d) meaning and, therefore, the degree to which a system is lean vs. over-engineered or subpar (both being defective and carrying obvious and hidden costs.)

A new take on QbD for Soft Systems, which are inherently fluid by definition, emphasizes acceptance testing probing for: usefulness & utility, usability & affectivity, consumability & serviceability and safety thru use cases and lifecycle events.