Systems Thinking & Engineering in the context of battery industry as regulated environment

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Trends & Situation in Regulated Industries | Stakeholder & Context Analysis

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Business Parameter | Opening the Problem Space

Battery Product & Production System | Defining System Boundaries



3

Functional Capability Architecture | Entering the Solution Space





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Systems Thinking & Engineering



We want to apply this process with our topic "Battery" and take you on this journey...

Typical Challenges in Regulated Industries

Geographies & Regions







Cultural Structures





Laws & Regulations



Localized Laws	
	~
Regulatory Bodies	*
Subven	tions & Ins

urrance





Typical Challenges for Regulated Products

A Localized Products due to regulatory compliance

Limited Part Re-Use across Products & Platforms

Limited Product Innovations due to high effort & costs in Re-registrations

Engineering:

Product Documentation & Data often seen as "Ask of Regulatory" not for "company-internal knowledge and quality asset" >> Document-centric & paper-based



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Current business parameters... ...determining the opportunity space





Leverage Digitalization as the key Accelerator

Increasing complexity expands opportunities to shape & drive Sustainable Business





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Jointly with Product Innovation also the Enabling System needs to transform



Each company needs to define their "System of Interest"

Product System



Level	System of Systems Society Eco-System & Energy Management System
Level	Product System Industrial Operating System & Supply System
Level	Smart, connected Product Customer Usage System & Assembly System
Level 4	Smart Product Battery Management System & Software System
Level	Physical Product Battery Cell/ Module/ Package System & Production System



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Examples of Product Engineering Capabilities



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Summary & Outlook







Thank you for your attention.

