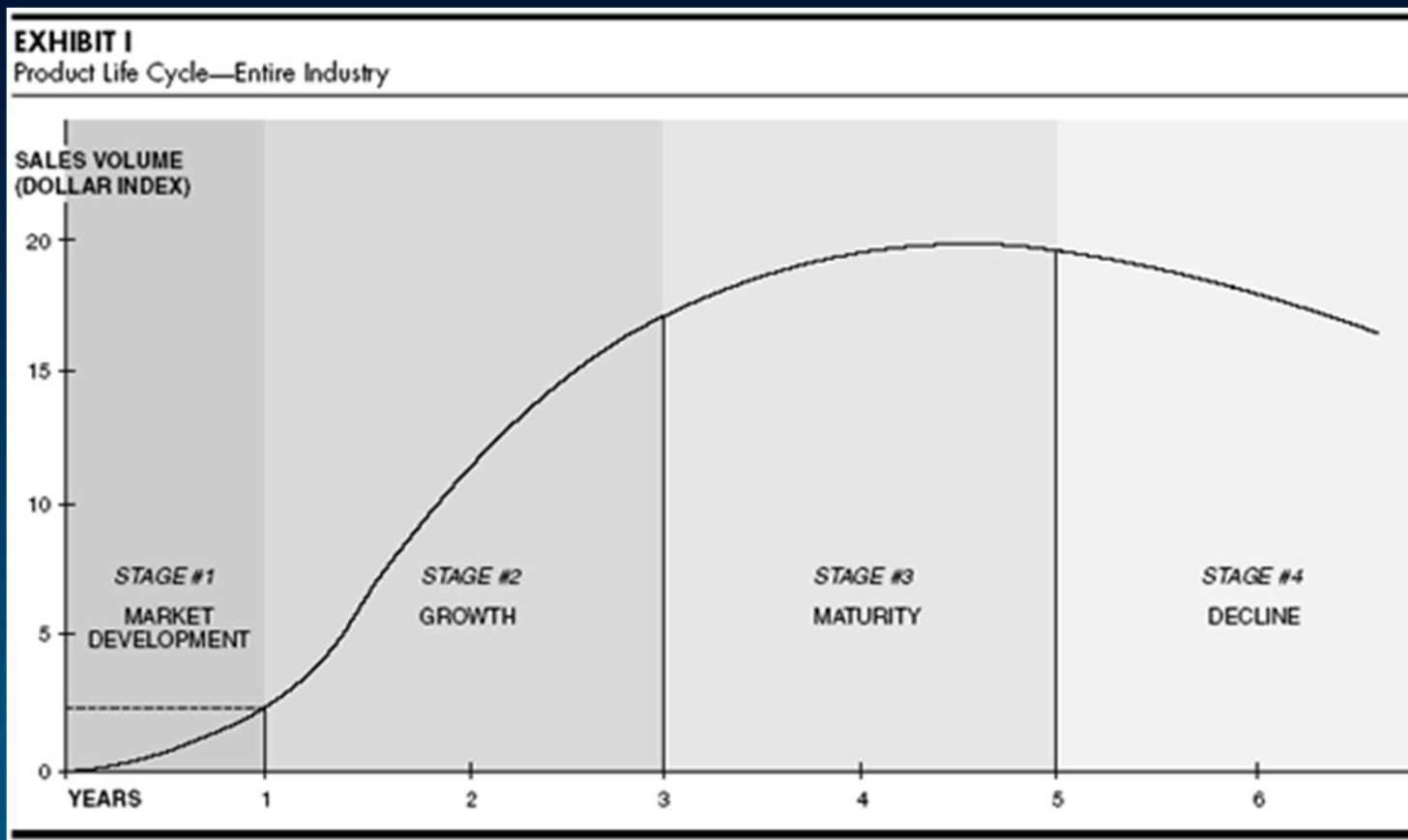![UKCRIC — UK COLLABORATORIUM FOR RESEARCH ON INFRASTRUCTURE & CITIES — Inspired infrastructure for better living]

UKCRIC's mechanisms for collaboration
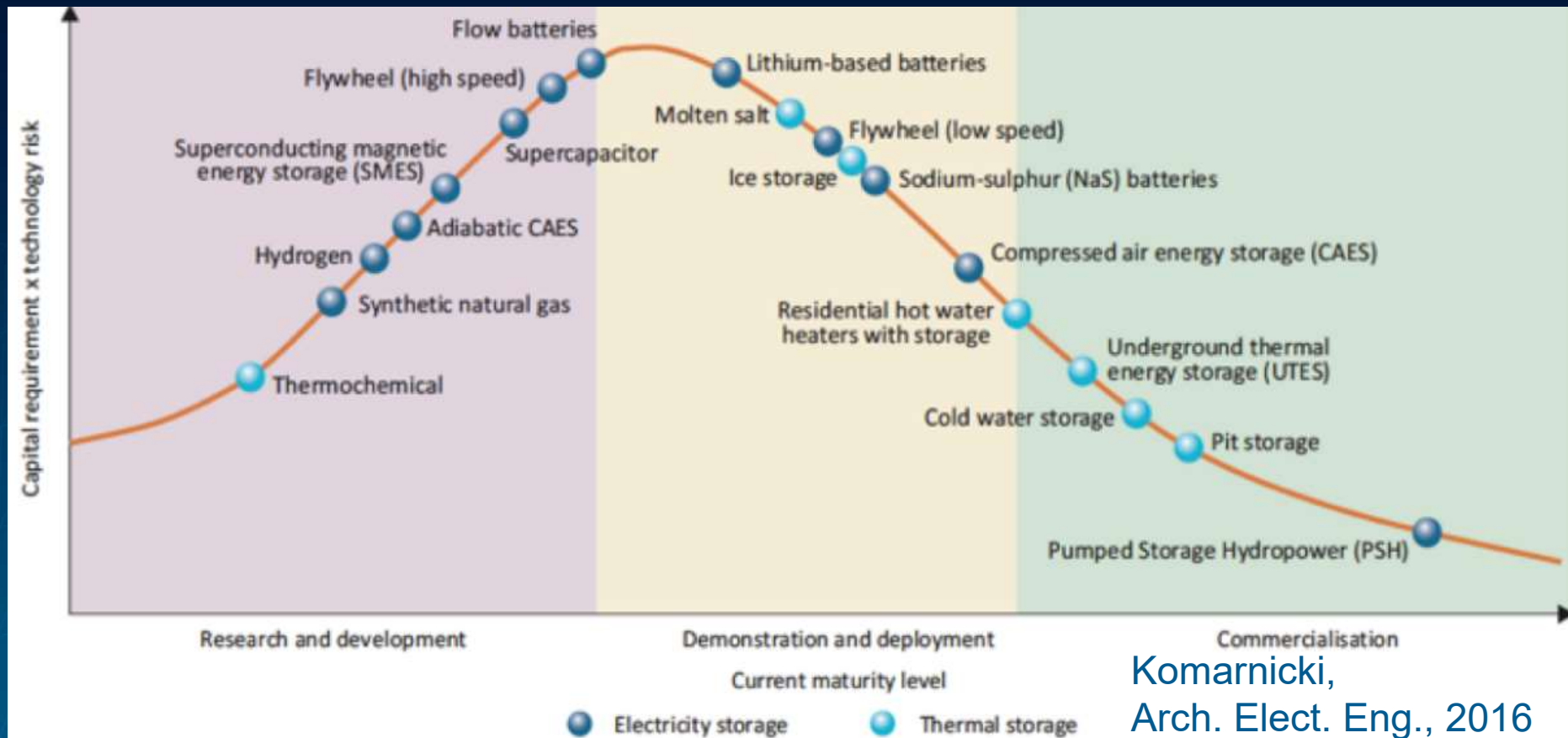
17th May 2022

Prof Liz Varga

Multiple ways to engage across the product (& service) life cycle

UKCRIC

EXHIBIT I
Product Life Cycle—Entire Industry

Levitt, HBR, 1965

Energy storage example

UKCRIC

Komarnicki,
Arch. Elect. Eng., 2016

Products and services: meeting needs: sustainability, resilience, liveability, …

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Infrastructure and city solutions must satisfy many requirements:

- It's no longer about just the cost
  - maximizing efficiencies, delivering multiple (e.g. social, environmental) benefits
  - minimizing material and resource usage, and waste & de-risking investments
- Environmental Impact and meeting the SDGs for sustainable development
- Resilience to hazards & ever-increasing threats of climate, leveraging interdependencies
- User experience and liveability, personal and public health, social and economic activity
- Reputation, trust and confidence: information privacy and security
- Compliance with and challenging regulations, codes & standards, competition, and responsive governance
- Health and Safety, Responsible Innovation

Market development & decline stages: Exploring

- Low Technology Readiness Levels (TRL)
  - optioneering, strategic thinking, anticipating the 'decline' …

Use case: exploring blue skies, finding the next big industry transformation

- Partner with the UKCRIC collaboratorium, individual facilities on low TRL research proposals
  - UKRI (EPSRC, NERC, ESRC, …)
  - Contributions: cash and in-kind
  - Collaborate as part of a project team
  - Shape the nature and focus of the research, e.g. safe-to-fail infrastructure

All life cycle stages: **Learning**

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- Knowledge
  - Theories, concepts, frameworks, case studies, techniques, methods, …

Use case: learning for improvement, reform, transformation
industry, organization, process, etc.

- Become an Associate Member (or pay a you go) to enjoy learning before others
  - Hands-on events, workshops, engagement
  - Webinars, seminars, face-to-face talks
  - Case studies, standards, regulations, guidance, etc.
- Supporting the work of the UKCRIC Centres for Doctoral Training (CDTs), Post-Doctoral & Early Career Researcher training (C-DICE) and skills development initiatives

Market development and growth stages: Focusing

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Low TRL piloting, prototyping, testing, …

Use case: eliminating (less viable options), focusing, least-regrets

- Network Innovation—sponsor a research stream, area, or project
  - E.g. DAFNI for digital twins, NBIF for prototyping buried asset identification tools
- Bespoke Framework Agreement
  - Commission research from skilled & experienced UKCRIC universities via the UKCRIC collaboration
- Innovate UK projects
  - Industry led with 30% academic support: facilitated access to the collaboratorium via the UKCRIC Operations Team or direct to a facility and/or a university

Market development and growth stages: Shaping

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Building the community of like-minded individuals and organisations

Use case: altruism, philanthropy, helping others to engage

- Become an Associate Member or give a donation or a contribution in kind:
  - Enable the growth of the outputs and impact of UKCRIC (e.g. commission reports, support the adoption of its scientific missions, etc.)
  - Facilitate the engagement of new partners, new facilities, and engaging with other initiatives (e.g. SUSI Network Plus projects)
  - Hosting initiatives (e.g. leveling up access to critical services in cities)
  - Support the development of an Infrastructure and Cities Institute

Market development and decline stages: Testing

- Higher TRL research: applied research using known methods and techniques, solving specific problems in the real world

Use case: addressing real-world challenges, opportunities, and needs

- Commission the UKCRIC legal entity
  - UKCRIC universities will deliver solutions using their facilities, staff, resources
  - Contract via UKCRIC Ltd. for flexibility
  - Profits: invested or returned to the collaboration for network building, capacity development
- Partner with UKCRIC Ltd. when we identify calls we would like to pursue
- Direct commissioning of a facility or facilities or universities

Multiple ways to work together

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- Becoming an Associate Member
  - For learning
  - For insight from inter-disciplinary; systems thinking; knowledge and ambitions of the team
- Network Innovation—sponsoring a research stream, area, or project
- Framework Agreement—to commission research from across the whole of UKCRIC
- Direct commissioning of a facility or facilities
- via UKCRIC Ltd (when an SME is needed for the contract, for multiple university flexibility, mostly higher Technology Readiness Level (TRL) opportunities)
- via the Collaboratorium (when direct to two/three universities is possible, for mostly lower Technology Readiness Level (TRL) opportunities)

Poll - prioritisation

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1. Use case: exploring blue skies, finding the next big industry transformation
2. Use case: learning for improvement, reform, transformation
3. Use case: eliminating, focusing, least-regrets
4. Use case: altruism, philanthropy, helping others to engage
5. Use case: addressing real-world challenges, opportunities, and needs

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FOR RESEARCH ON
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**Inspired infrastructure
for better living**

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