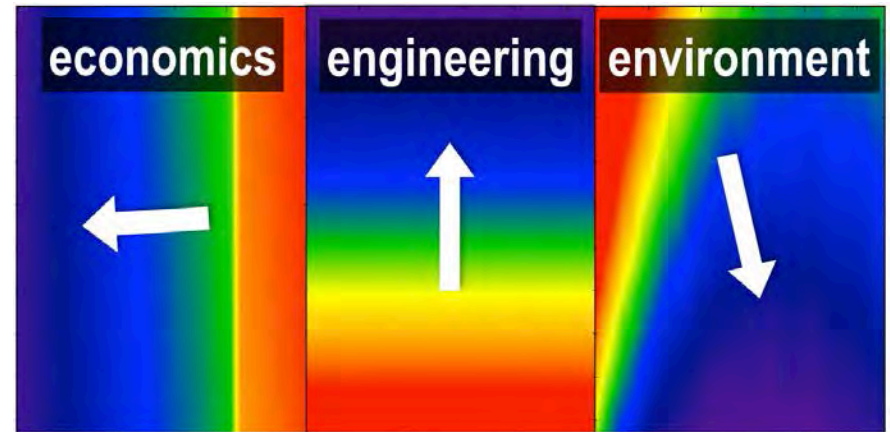


Sustainable Design and the Transition from Wastewater Treatment to Resource Recovery

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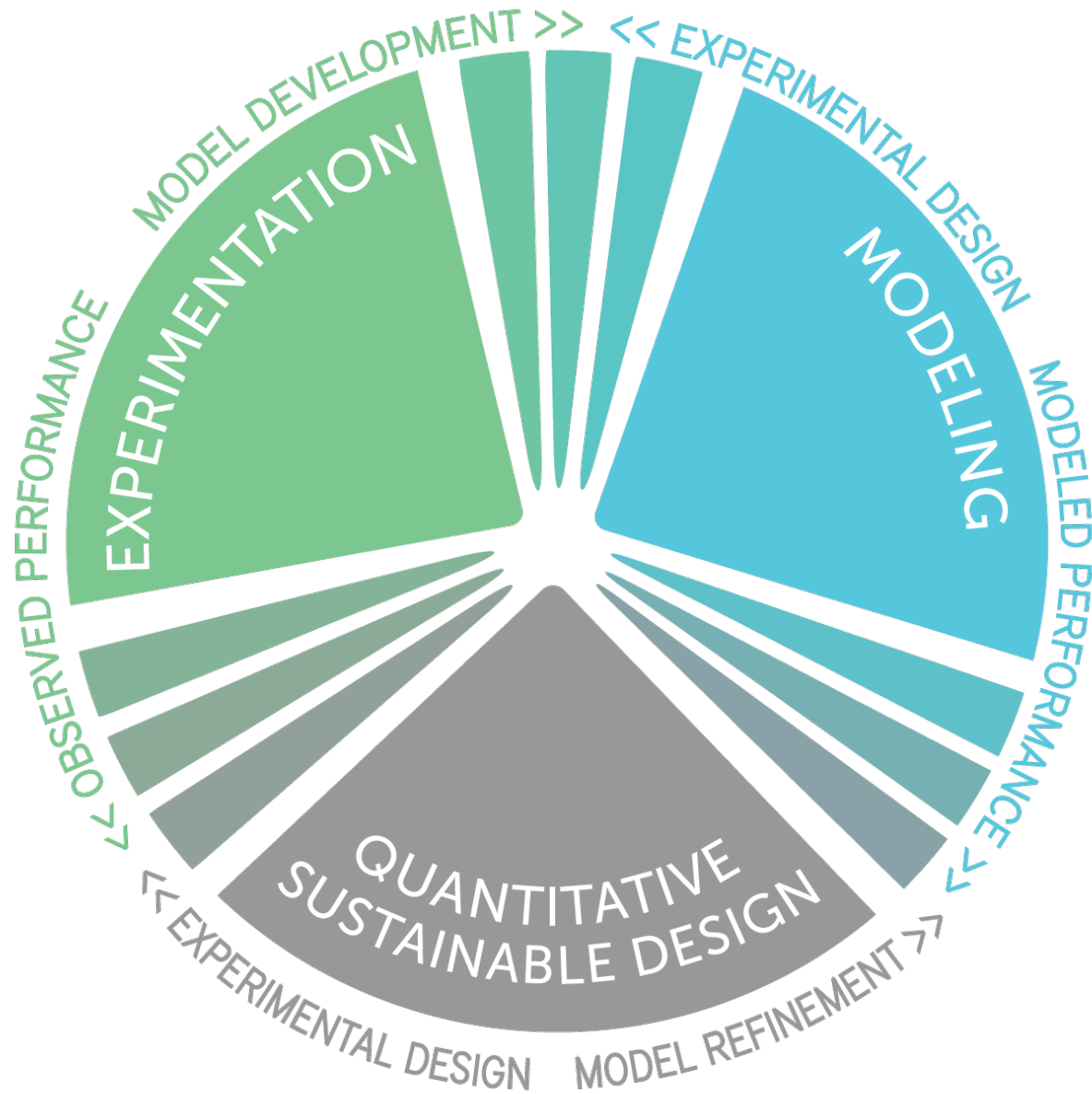
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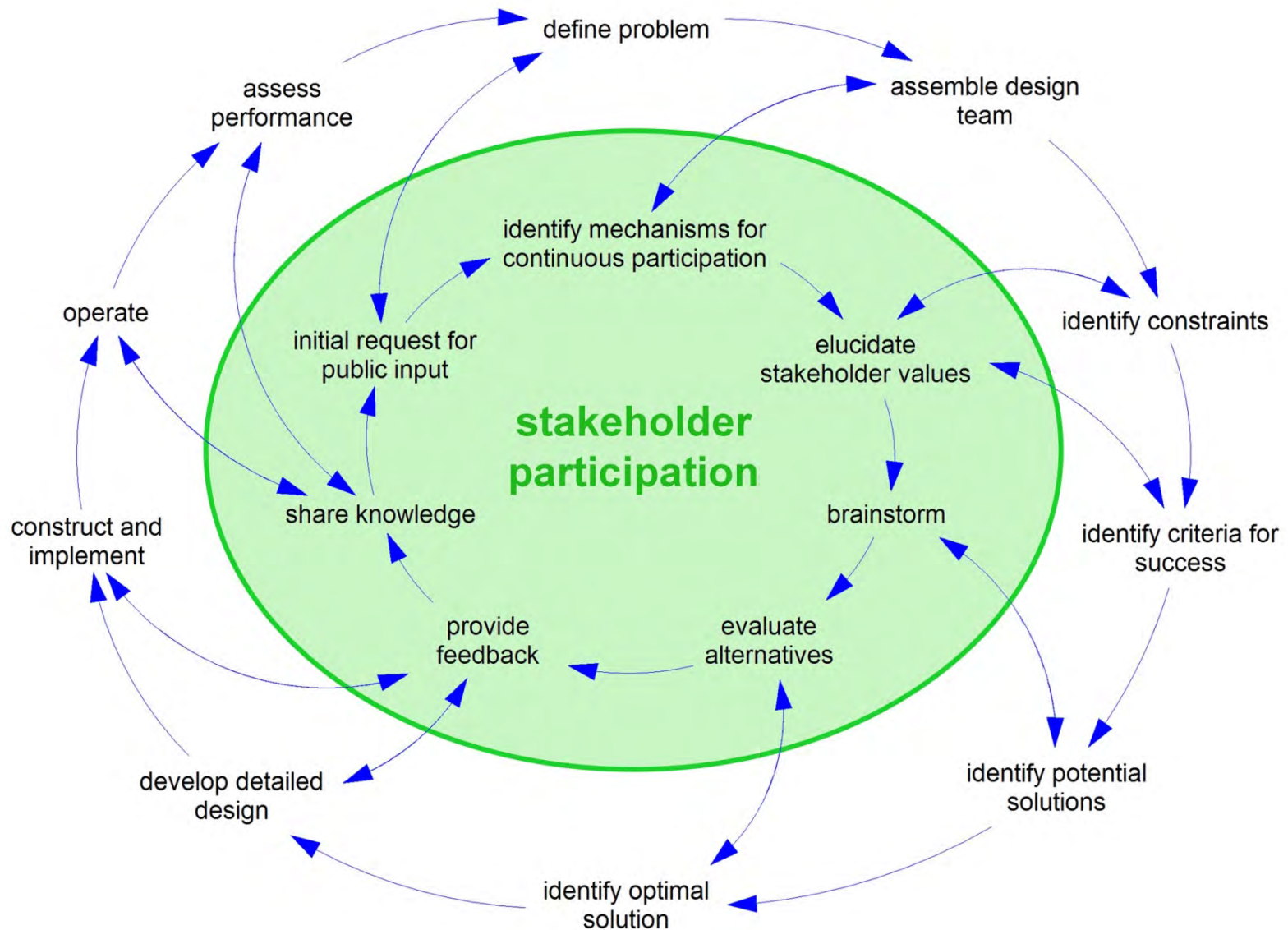
UIUC
October 24, 2017



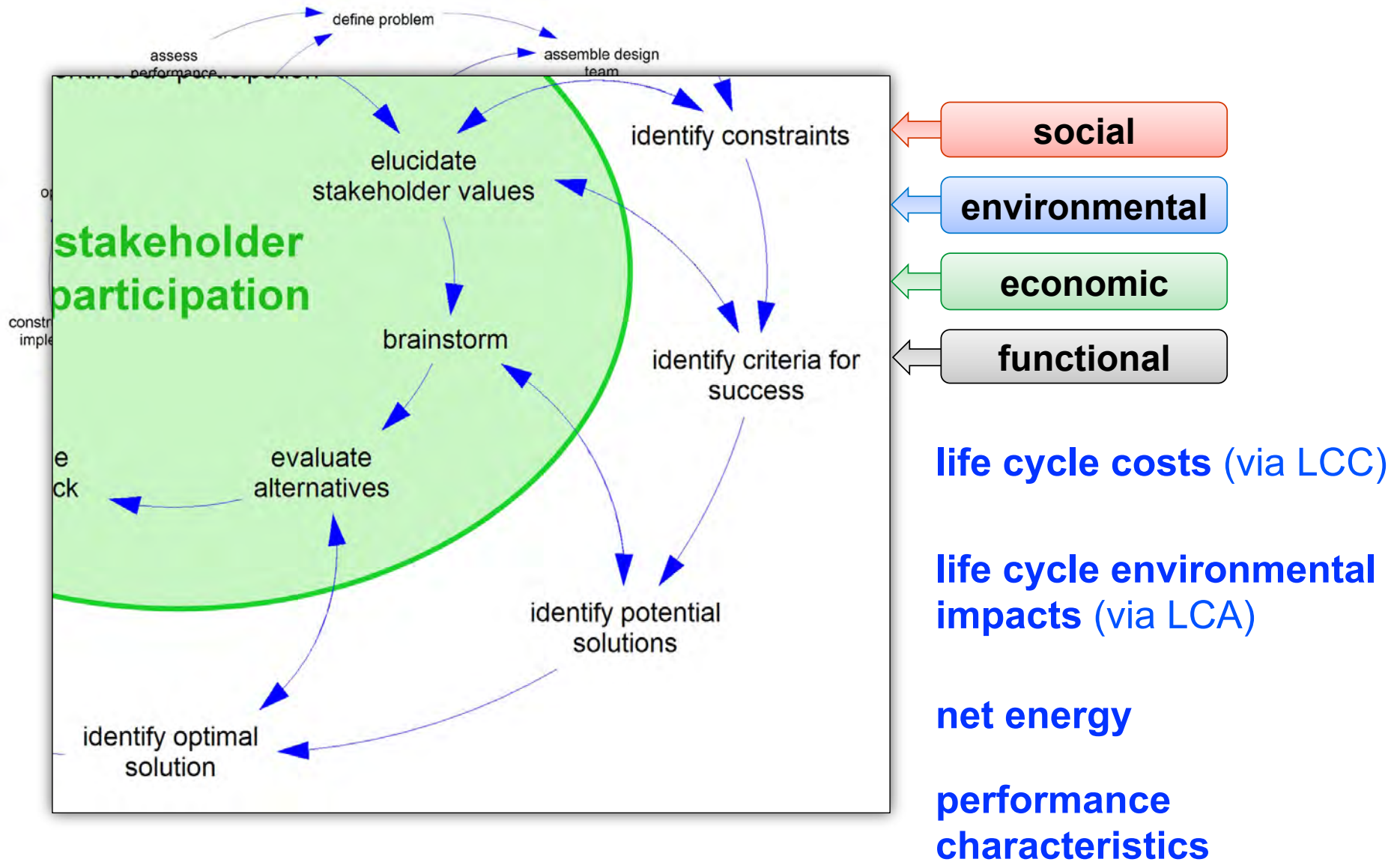
We integrate **experimentation**, **modeling**, and quantitative sustainable design (QSD) for technology development.



Our definition of *sustainable design* focuses on the planning and design process itself.

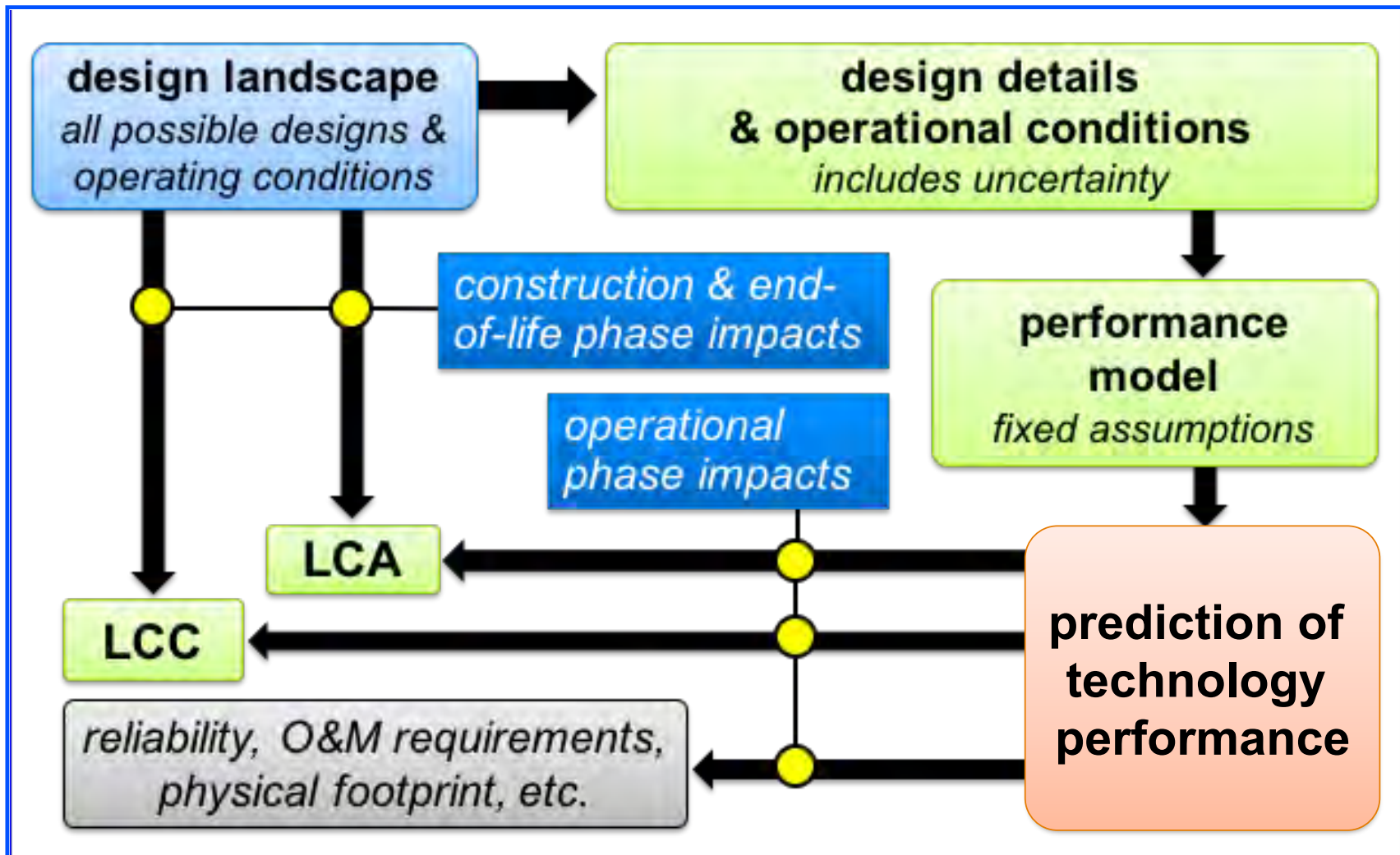


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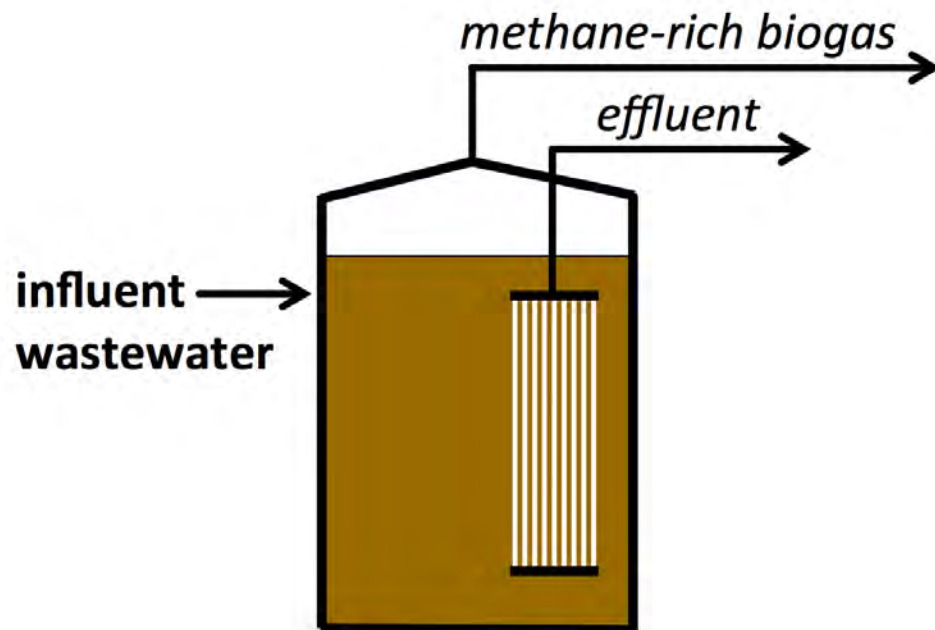
Design and operational decisions are linked to sustainability metrics in a quantitative framework.

Quantitative Sustainable Design (QSD) Framework

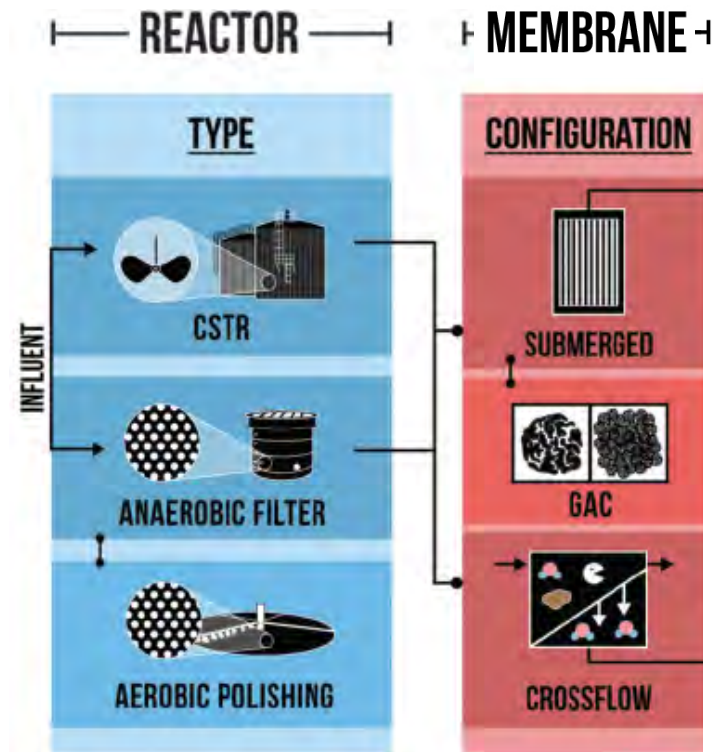


We apply this sustainable design methodology to explore novel technologies, including resource recovery from wastewaters.

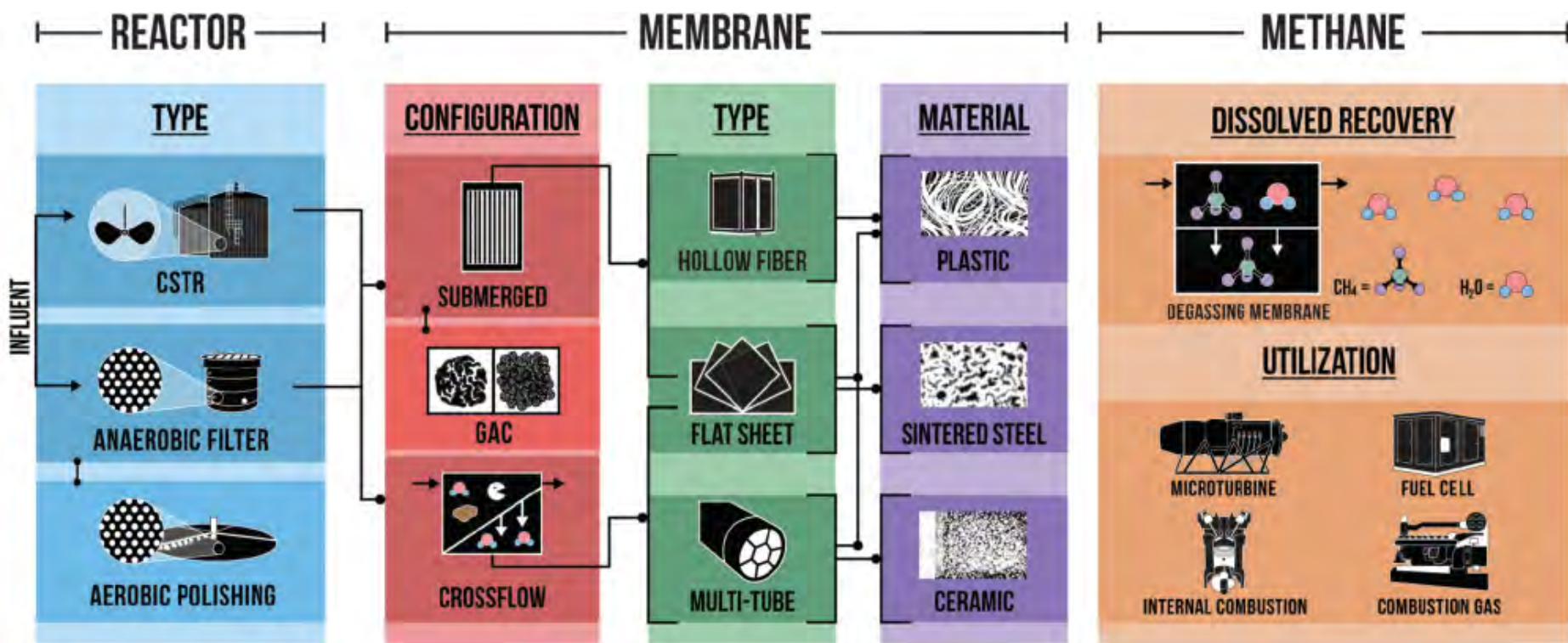
**anaerobic membrane bioreactors (AnMBRs)
produce bioenergy from organic carbon in wastewaters.**



There are over hundred ways to design an AnMBR.



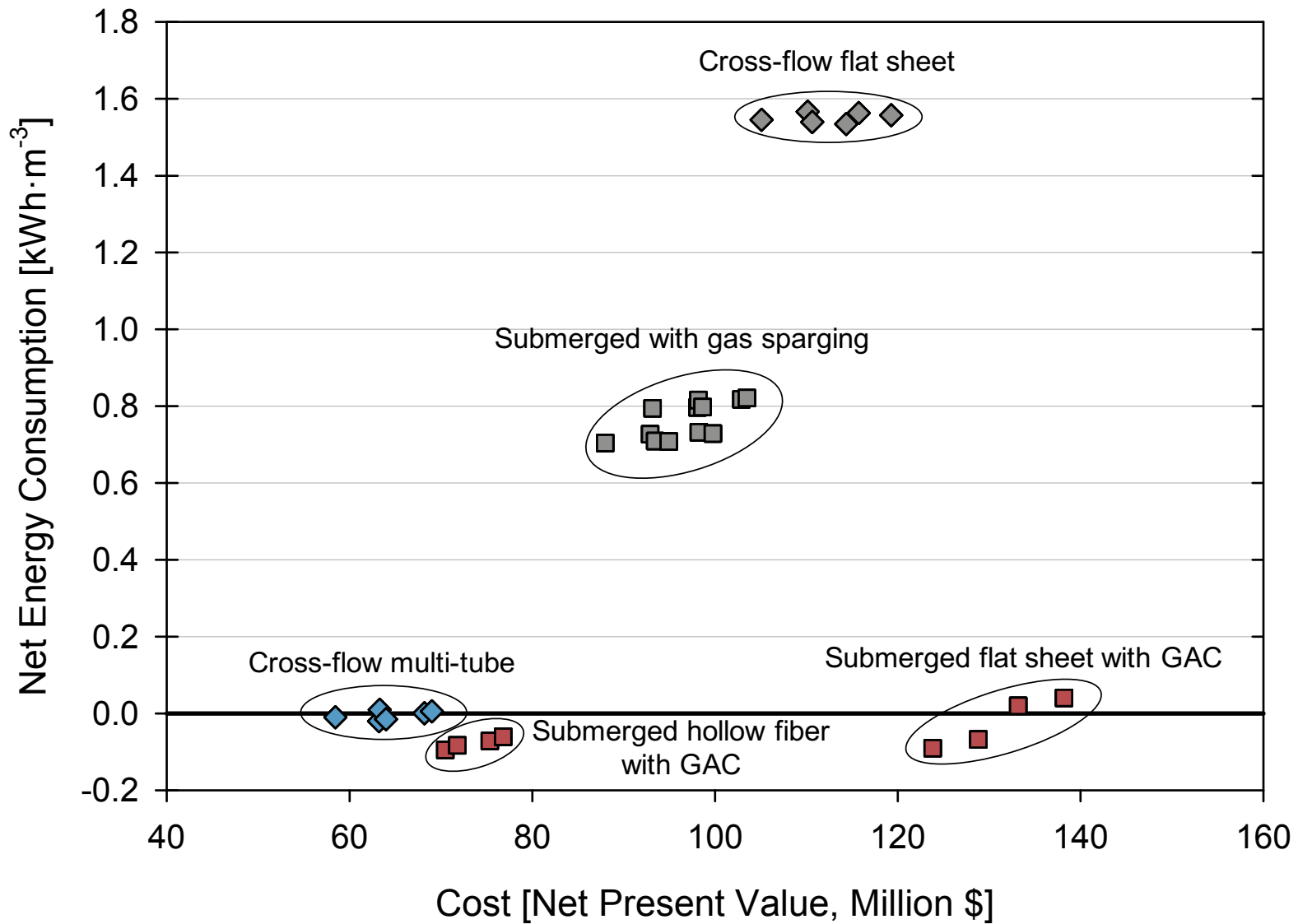
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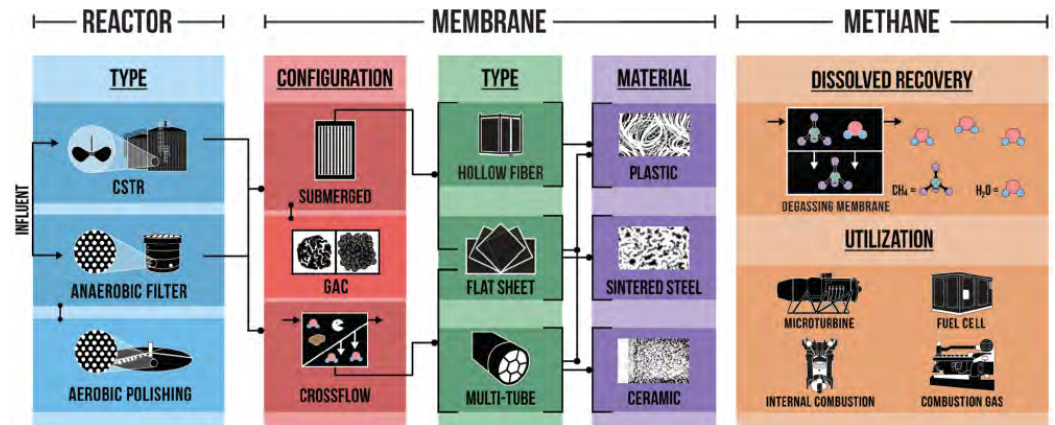
150 discrete configurations

infinite number of design and operating conditions

With this, we can narrow down which clusters of technology make the most sense to pursue.



In conclusion, think about sustainable design as a process to navigate trade-offs and prioritize actions.



Quantitative Sustainable Design (QSD) Framework

