

## Pathway for emerging technology: from concept to commercialization



Stage	Basic Research	Applied Research	Development	Commercial Introduction and Demonstration in Marketplace		Commercial Growth and Deployment
Character	Academic, scientific suggestion, discovery, national and international, risky, long-term to results	Laboratory verification, benchtop proof-of-principle partial prototype, local company, company internal research division or academic partner	Application and product engineering, full-scale working prototype, enhancements to existing products, entrepreneurs	Launch of first-generation product with in-field trials, emphasis on design for ease of manufacture and scale-up	Second-generation "hardened" design, sales to early adopters, warranties, publicity	Gain adequate market share to support business, sales to pragmatists and mass market
Hurdles		<ul style="list-style-type: none"> <li>• Acquire technology rights</li> <li>• Gain access to lab equipment</li> <li>• attract operating funds</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Management team</li> <li>• Business plan</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Obtain UL listing</li> <li>• third-party testing to validate claims</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Marketing: sales pitch</li> <li>• Chicken/egg: large volume production for price reduction</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Training of sales force, installation / maintenance technicians</li> <li>• regulatory constraints, codes and standards</li> <li>•</li> </ul>
Existing Programs Addressing Hurdles						
Gaps/Needs						