

# • Leveraging technology and innovation in disaster risk management and finance

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# Innovations and emerging technologies can address acute disaster risk management challenges in the APEC region

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The Asia-Pacific region is highly vulnerable to disaster risk, with the poor affected disproportionately

- Annual average losses from disasters in APEC economies amount to \$140bn\*
- Developing economies and vulnerable populations bear a disproportionate impact of disasters
- The region faces increasing risks due to development and climate change, with potential for cascading impacts

Efforts to manage risks are hampered by a lack of enabling capacity or policy framework

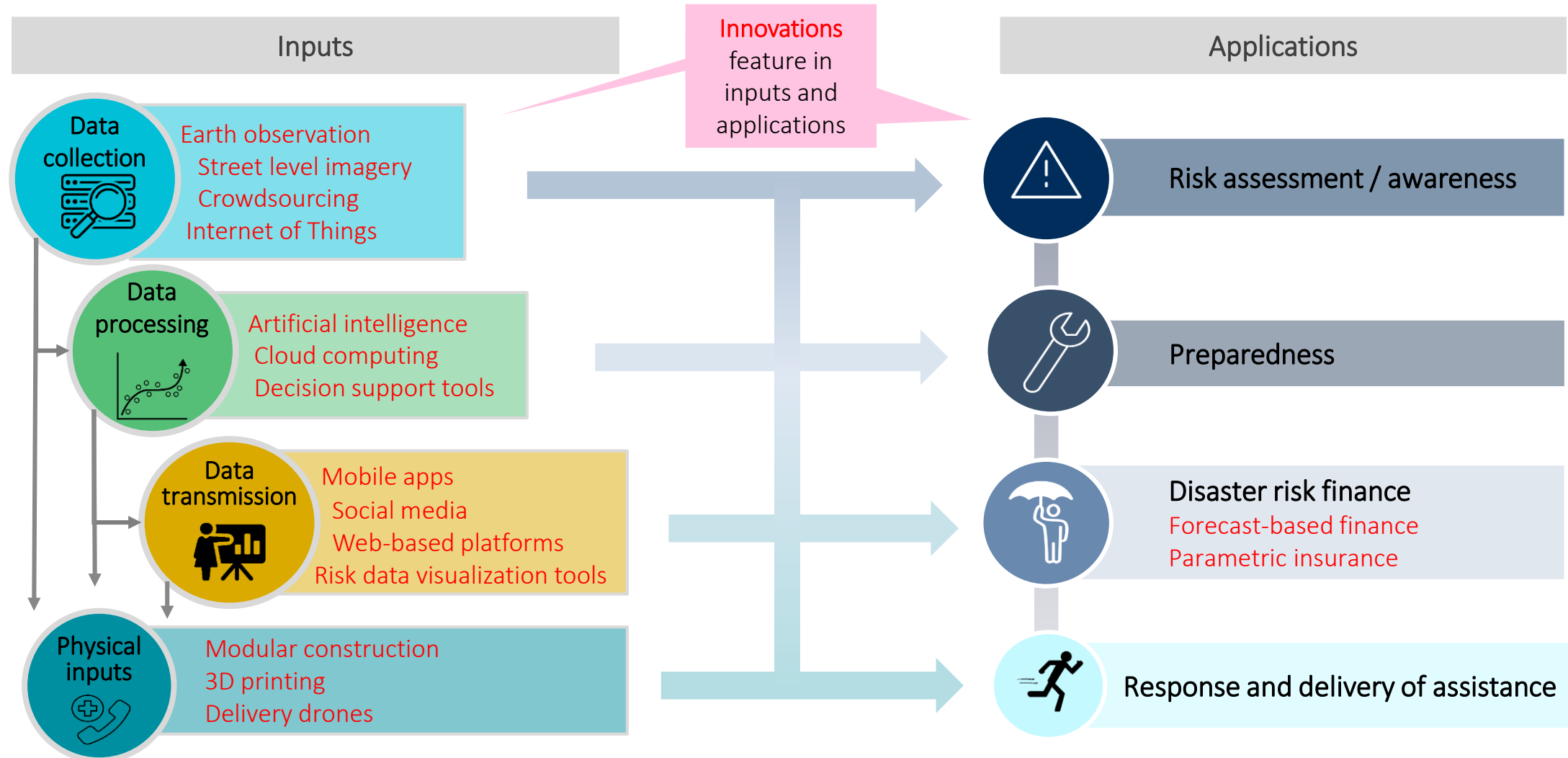
- Policymakers have incomplete information on risk and lack capacity
- Underdeveloped insurance markets mean risk is mis-allocated, particularly in poorer economies

Across the world, innovations and emerging technologies are being adopted to address major challenges in disaster risk management (DRM) and finance (DRF)

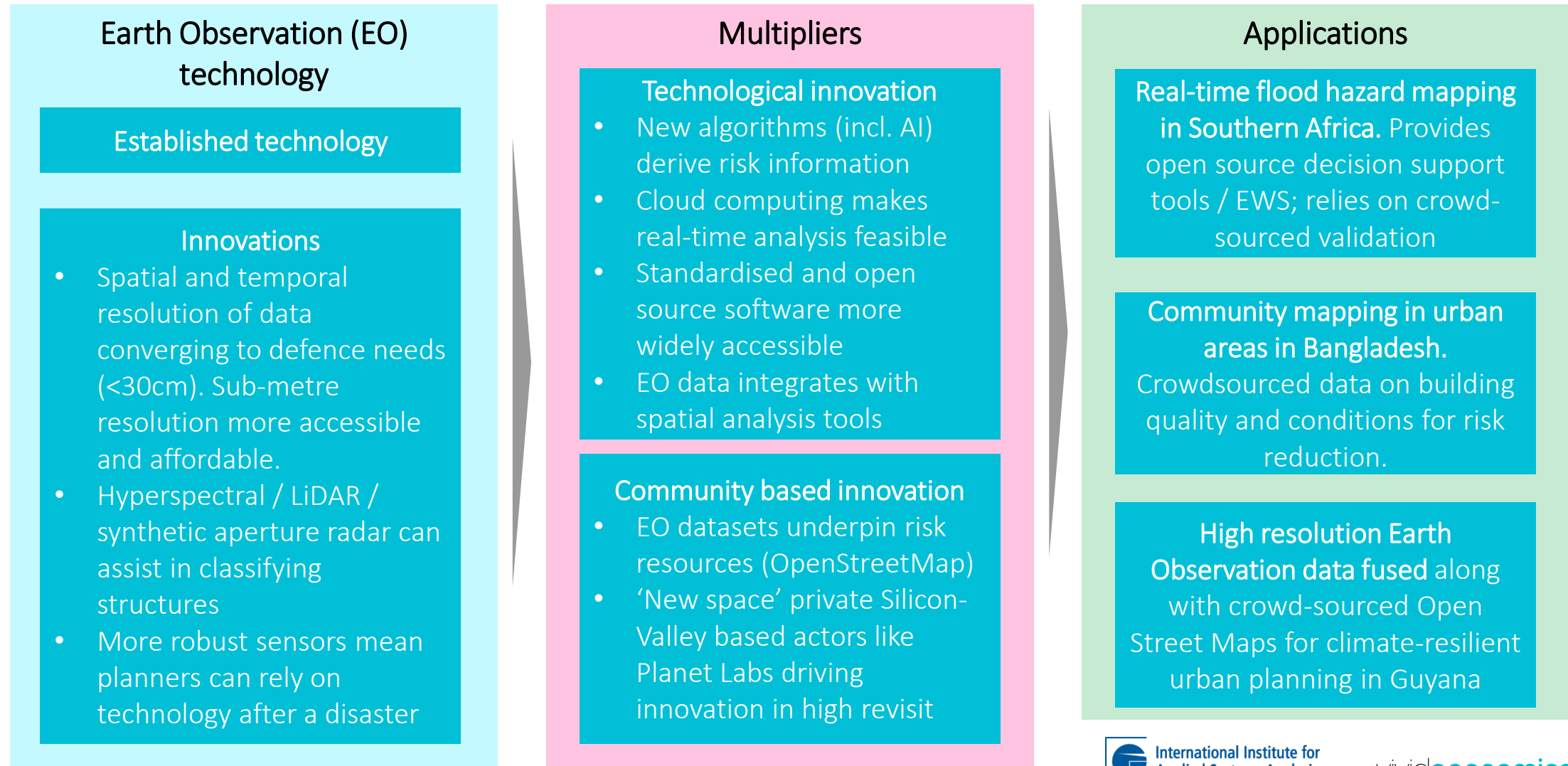
Our report seeks to understand the potential for technologies to overcome barriers to effective DRM and DRF in the APEC region -- and to set out an agenda for stakeholders to unlock this potential

\*Source: EM-DAT, average over 2010-2018

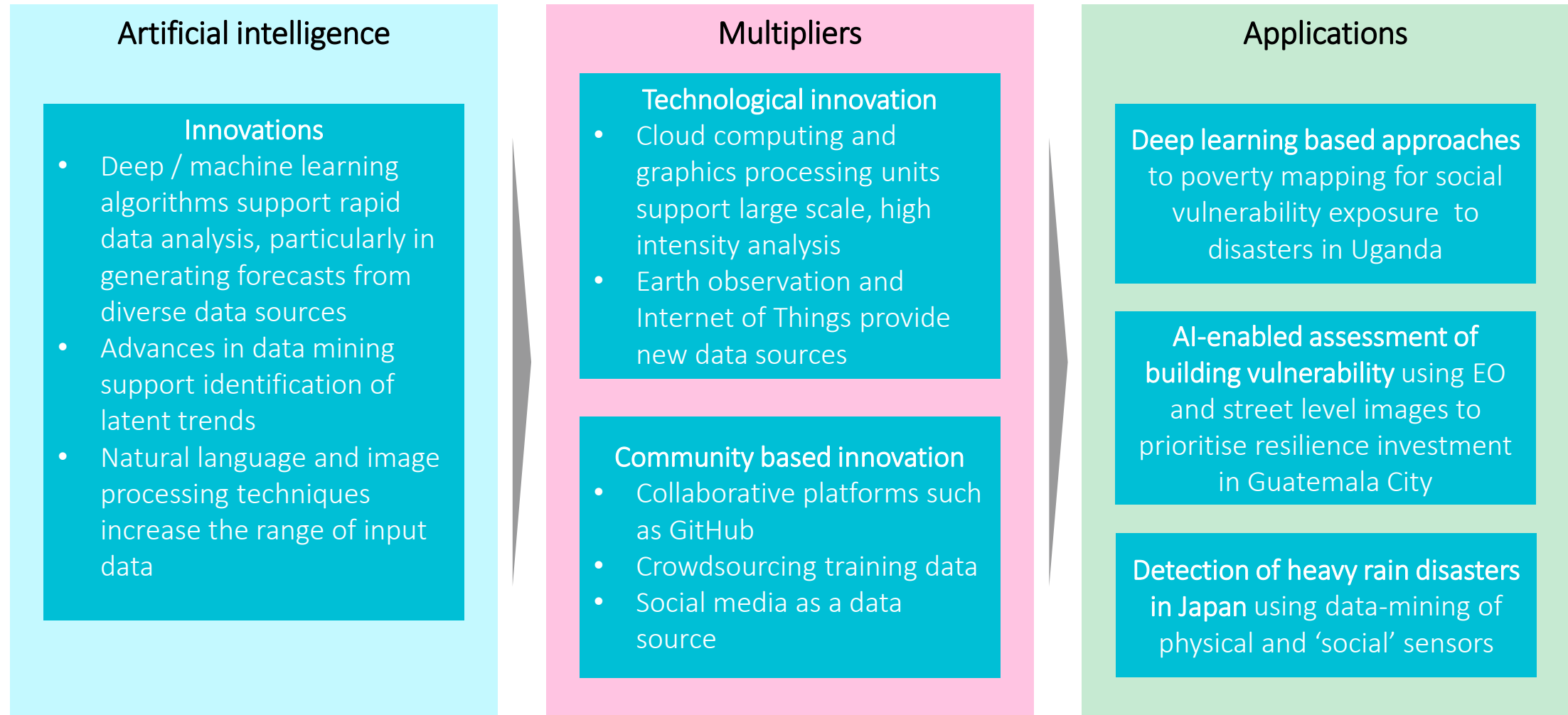
# Innovations span DRM and DRF value chains, producing potential benefits across all areas of public and private sector risk management



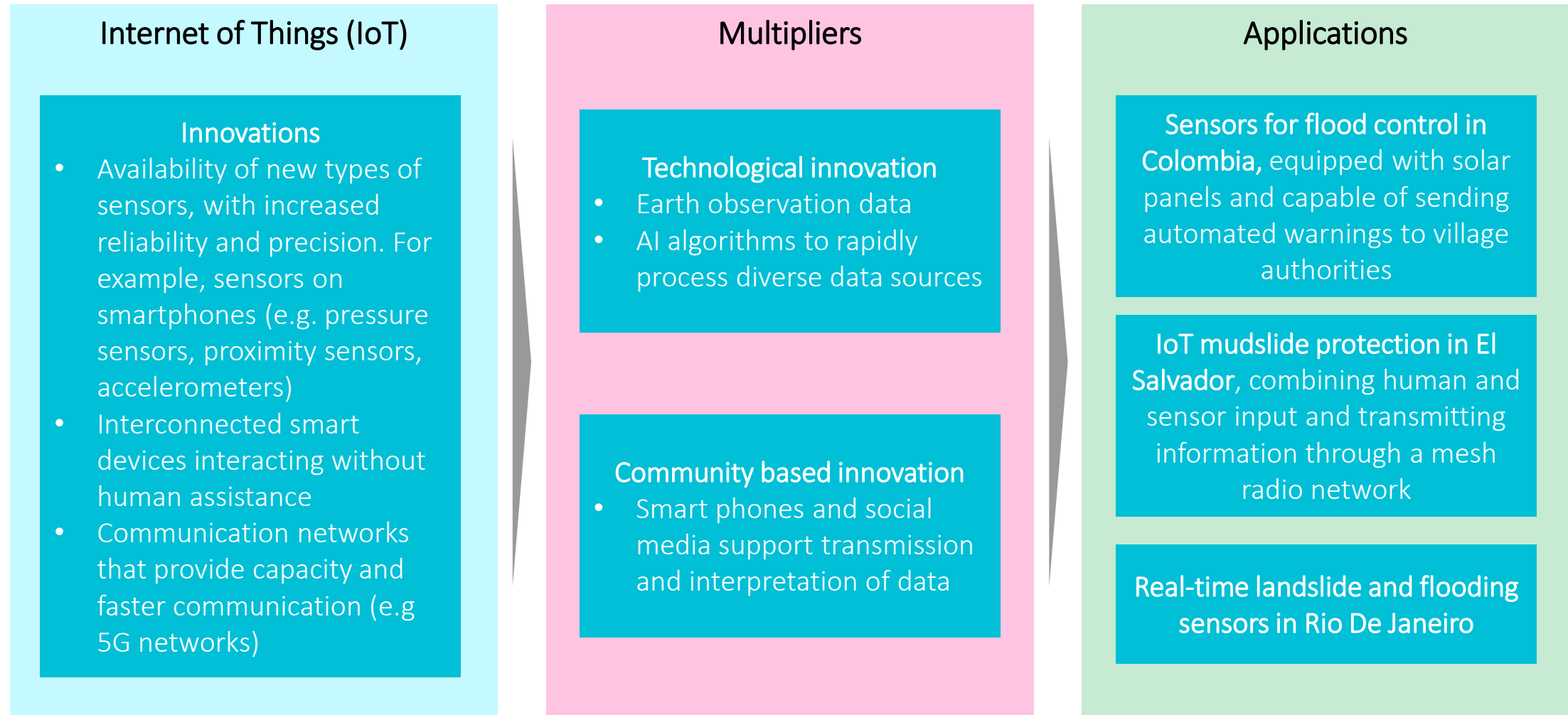
# Earth observation technologies are increasingly applied in DRM, as a result of innovation both in the technology itself and in adjacent areas



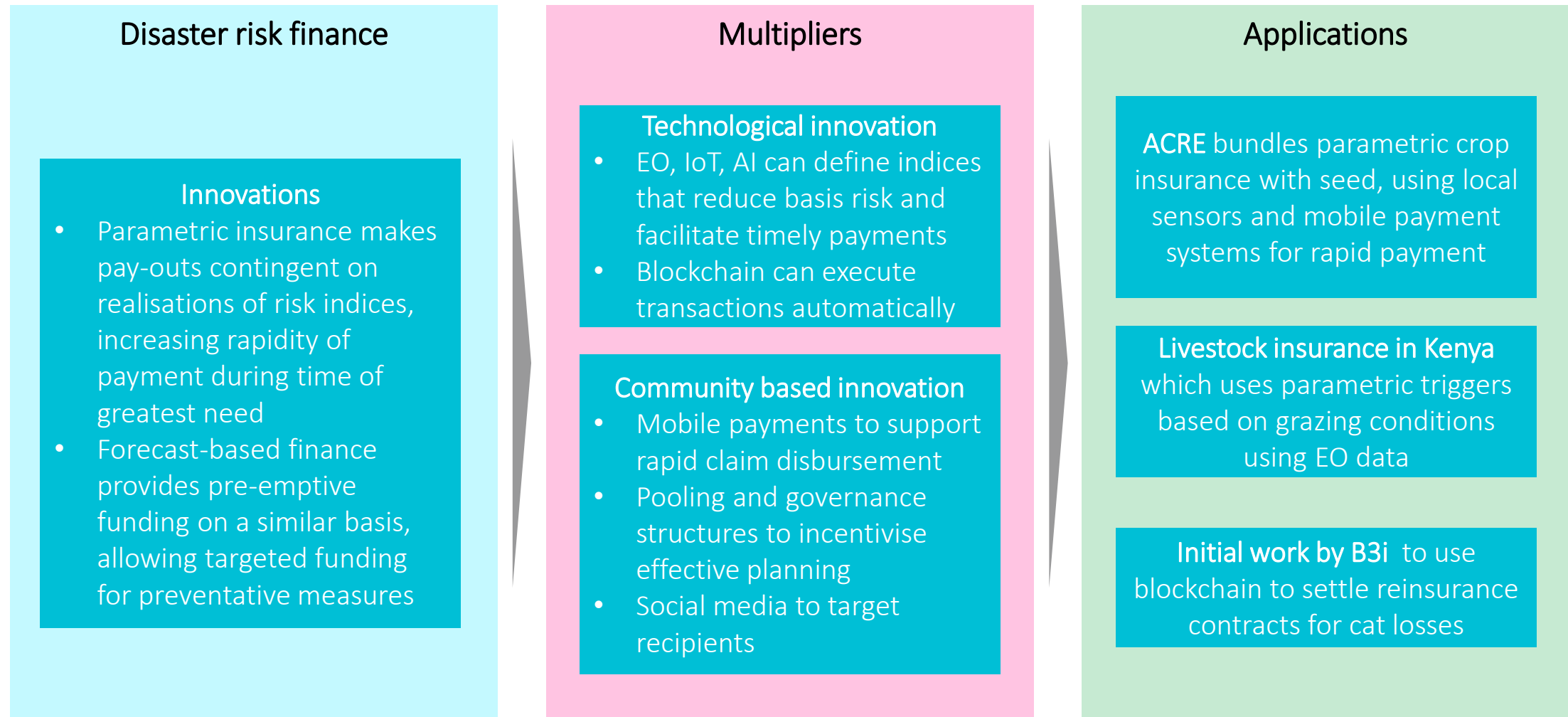
# Artificial intelligence techniques can improve understanding of risks and acuity of forecasts, leveraging data collection and computation technologies



# The internet of things is a worldwide network of interconnected objects that can transmit information on disaster risk and assist in coordinating responses



# Innovative DRF mechanisms leverage data and mobile technologies to provide timely funding for protection, relief and recovery efforts



## Barriers to the adoption of novel technologies are wide ranging and call for responses across various domains of government

Enabling conditions	Infrastructure requirements	Implementation capacity	Access to data and software	User awareness and acceptance	Policy and governance barriers	Regulatory challenges
<b>Example technologies</b>	<ul style="list-style-type: none"> <li>Internet of things</li> <li>Cloud computing</li> <li>Social media</li> <li>Mobile banking</li> </ul>	<ul style="list-style-type: none"> <li>Decision support tools</li> <li>Parametric insurance and forecast based finance</li> <li>Delivery drones</li> </ul>	<ul style="list-style-type: none"> <li>Earth observation</li> <li>Artificial intelligence</li> </ul>	<ul style="list-style-type: none"> <li>Parametric insurance</li> <li>Visualization tools</li> <li>Social media</li> </ul>	<ul style="list-style-type: none"> <li>Innovation in government</li> <li>Decision support tools</li> <li>Parametric insurance and forecast based finance</li> </ul>	<ul style="list-style-type: none"> <li>Parametric insurance</li> <li>Data collection technologies</li> <li>Artificial intelligence</li> </ul>
<b>Solutions</b>	<ul style="list-style-type: none"> <li>Network connectivity</li> <li>Smartphone penetration</li> </ul>	<ul style="list-style-type: none"> <li>Knowledge transfer schemes</li> <li>Technical training for policy makers</li> </ul>	<ul style="list-style-type: none"> <li>Local data collection and sharing; open source platforms; technology transfer agreements</li> </ul>	<ul style="list-style-type: none"> <li>Awareness and digital literacy campaigns; pilot schemes</li> </ul>	<ul style="list-style-type: none"> <li>Innovation incentives</li> <li>Demonstrators</li> <li>Effective coordination and stable funding regimes</li> </ul>	<ul style="list-style-type: none"> <li>Comprehensive risk-based regulation on privacy, finance, consumer protection, discrimination</li> <li>soft-law mechanisms</li> </ul>



## Action by policy makers can promote the successful adoption of technologies

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### National interventions to promote innovation directly

- make innovation a distinct DRM policy goal, with appropriate oversight
  - ◇ 'Chief Technology Officer' role in disaster agencies
- provide incentives and structures for innovation to take root
  - ◇ incubators or seed funding for demonstration projects

### National interventions to create enabling conditions for innovation in DRM / DRF

- support infrastructure delivery, with a particular focus on connectivity for vulnerable regions / groups
- training for DRM / DRF professionals on use of sophisticated risk information
- conduct awareness / educational campaigns for users – particularly financial literacy
- develop regulations and enforcement of data security to engender public trust
- update financial regulatory frameworks to allow for innovation in insurance products, with effective consumer protection

### Interventions by international organisations

- establish platforms to transfer knowledge
- identify synergies in DRM/DRF activities across regions and build common solutions