ITU-T Kaleidoscope Conference
Innovations in NGN

Standards' Dynamics Through An Innovation Lens: Next Generation Ethernet Networks

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Question

- Standards change inherent but problematic component of innovation
- *When and where are issues of standards' change likely to occur and how can stakeholders deal with it*?

- Structure of presentation
  - Innovation theory
  - Illustration: next generation Ethernet
  - Tools
  - Conclusion

Drivers for standards' change

Drivers for Change	External causes	Internal causes
Source of change	Co-evolution with technology	Standardisation process
Characteristics of change	Inevitable	Consequ. of standardiz. management process (intentional or accidental)
Framework	Innovation	Management and business
Overall aim	Create up-to-date standard	Create a stable standard
Management objectives	Change control	Quality control

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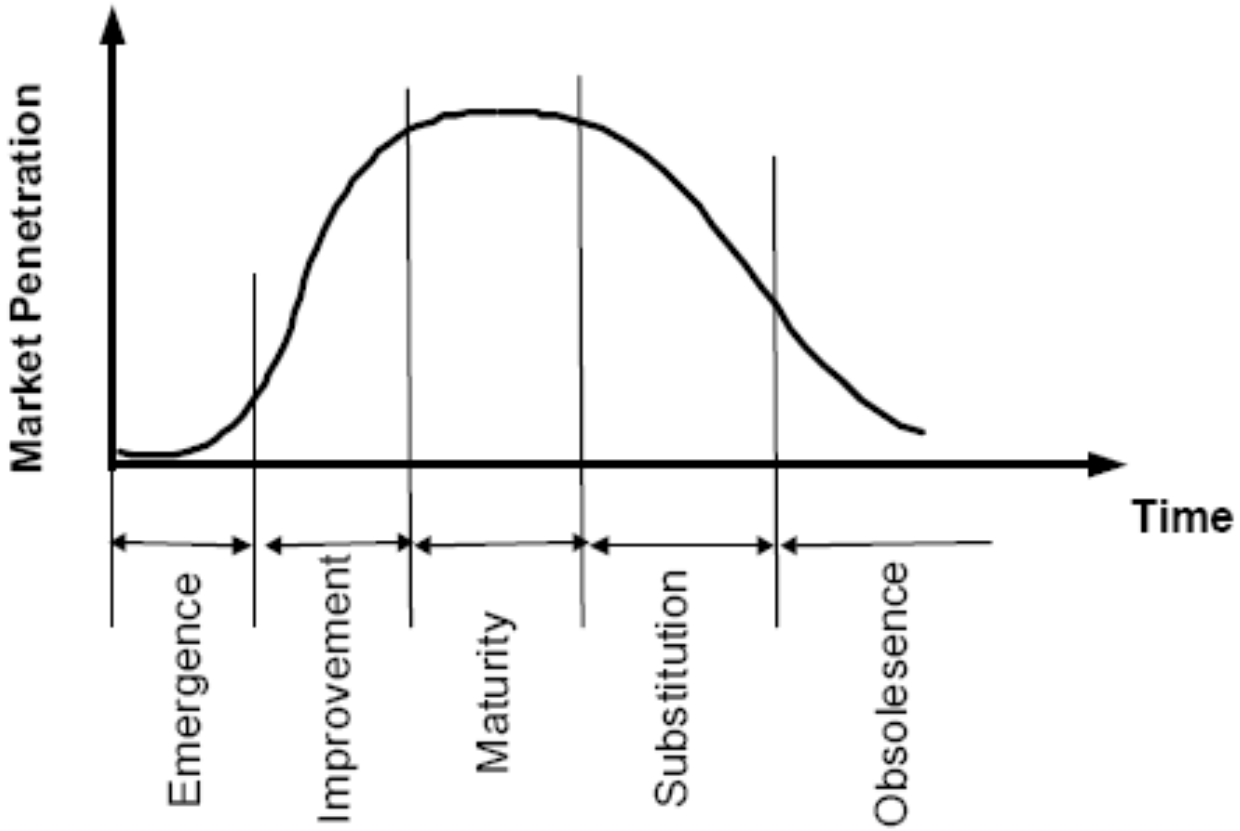
Innovation framework

- Technology life-cycle
- Timing of standardization
- Classification of innovations

Technology life cycle



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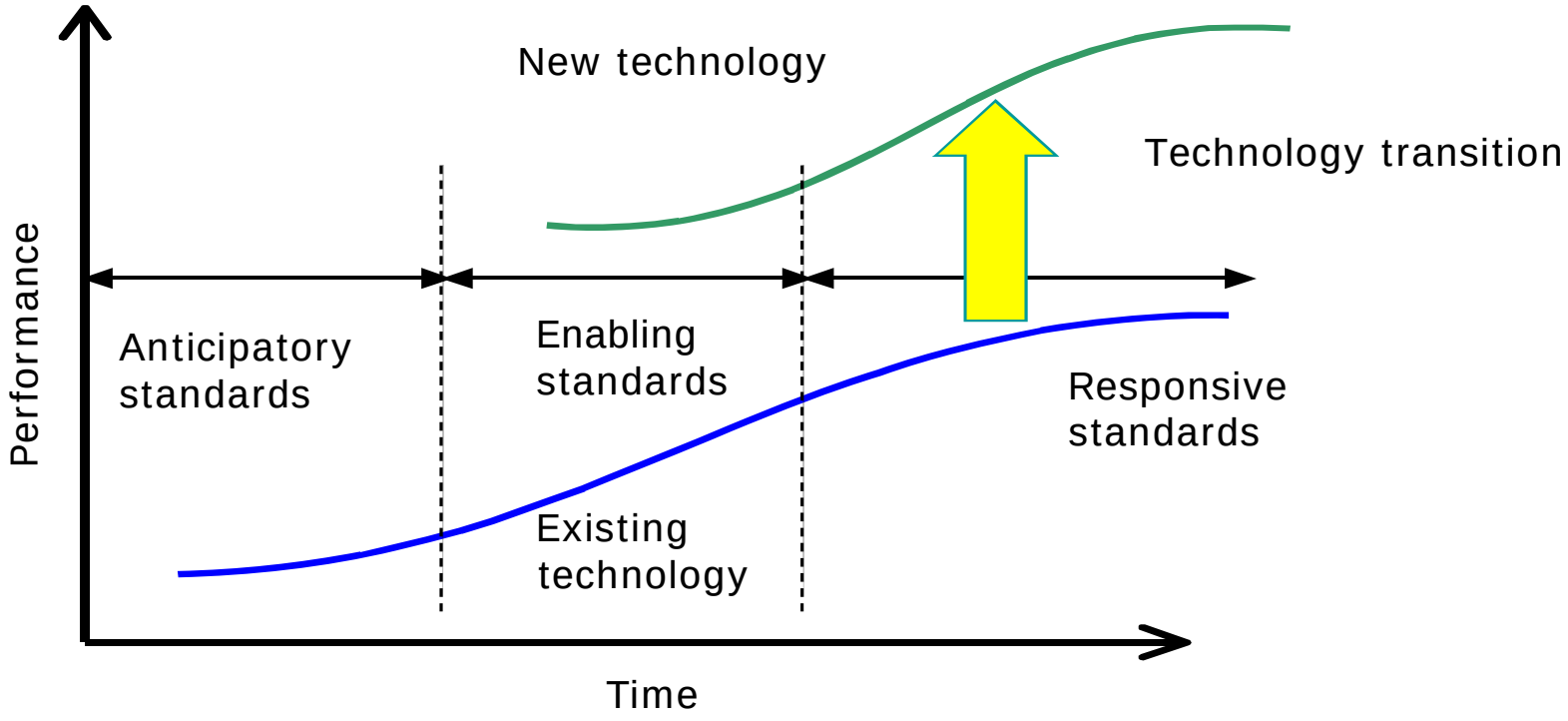
Timing of Standardization



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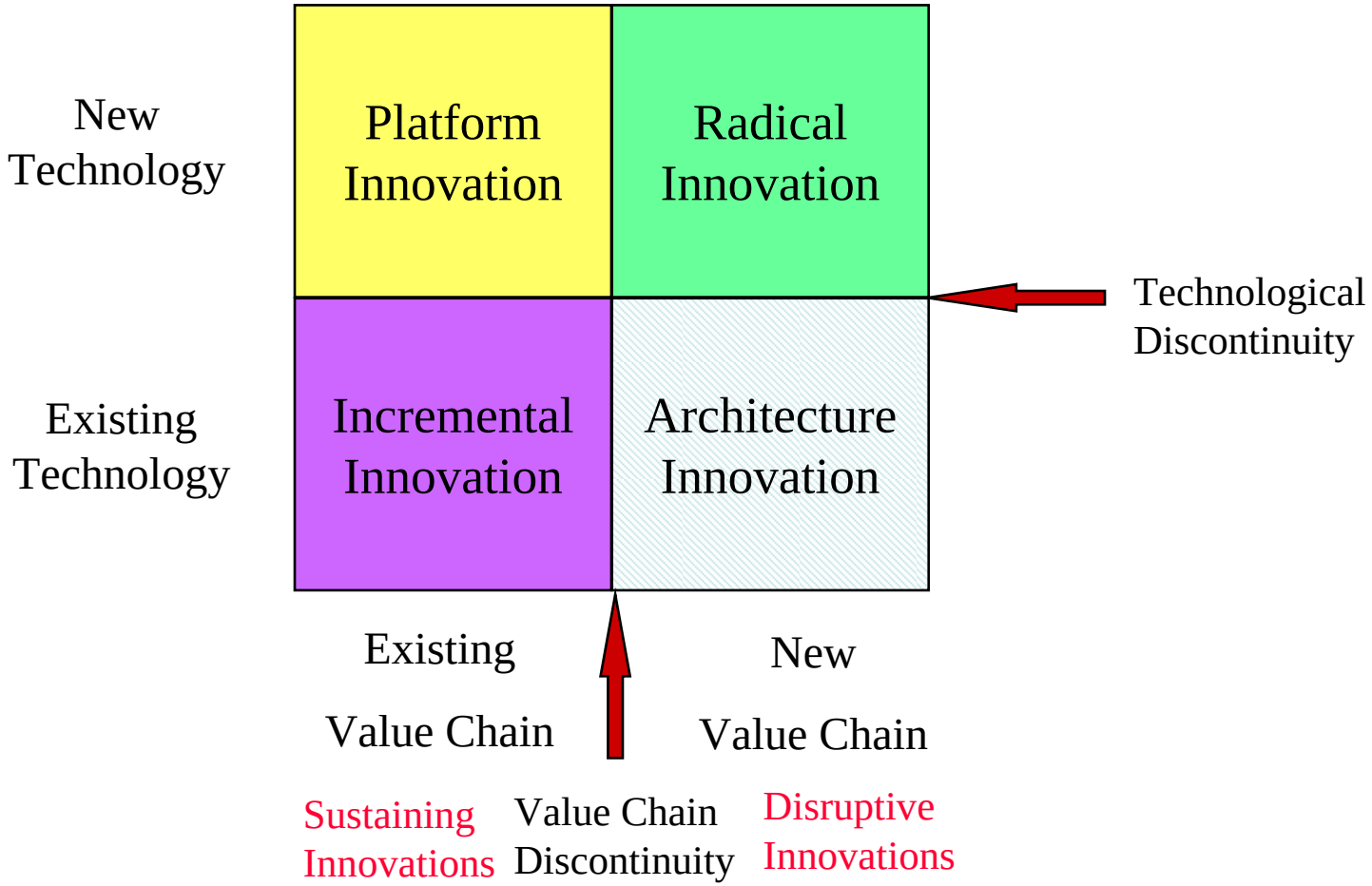
Classification of innovations



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Case: New generation Ethernet networks

Standards setting	**ITU-T SG 15**	**IEEE 802.3**
Intended Rate	100 Gb/s	40/100 Gb/s
Value chain	Carrier networks (e.g., long distances; high reliability)	Server interconnects (e.g., short distances)
Technologies to be standardised	New technologies	Extending existing technologies
Innovation	Platform	Incremental
Characteristics of standards dynamics	Enabling standard Succession	Enabling standard Revision
Impact of standards change: compatibility	Backward compat. difficult	Backward compat. easier

Tool 1:
Timing of Standardization & Dynamics of standards

Timing of Stand. / Standards Dynamics	Anticipatory Standards (Emergence)	Enabling Standards (Improvement)	Responsive Standards (Maturity)
Amount of expected changes	+++	++	+
Required speed of standardization	++	+++	+
External causes of change – firm's perspective	Immaturity of technology	Technology & market uncertainty	Cost reduction; performance optimisation
External causes – application area perspective	Imprecise customer and supplier requirements	Market growth	Changes in market & regulations

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Tool 2: Type of innovation & characteristics of standards' change

Features / Innovation	Technology disruption	Value chain disruption	Impact on standards	
			Compatibility Preserved?	Type of change?
Incremental	N	N	Possible	Revision
Architectural	N	Y	N/A	New standard
Platform	Y	N	Unlikely	Revision/ New standard
Radical	Y	Y	Almost impossible	Replace/ Succession

Conclusion

- We used innovation theory to develop tools that indicate *"where and when issues of change are likely to occur and in what way standardisers can deal with change"*

- Research recommendations
  - Check predictions future Ethernet
  - Measure and quantify tools