Understanding supply chain resilience – An application of the network configurational approach

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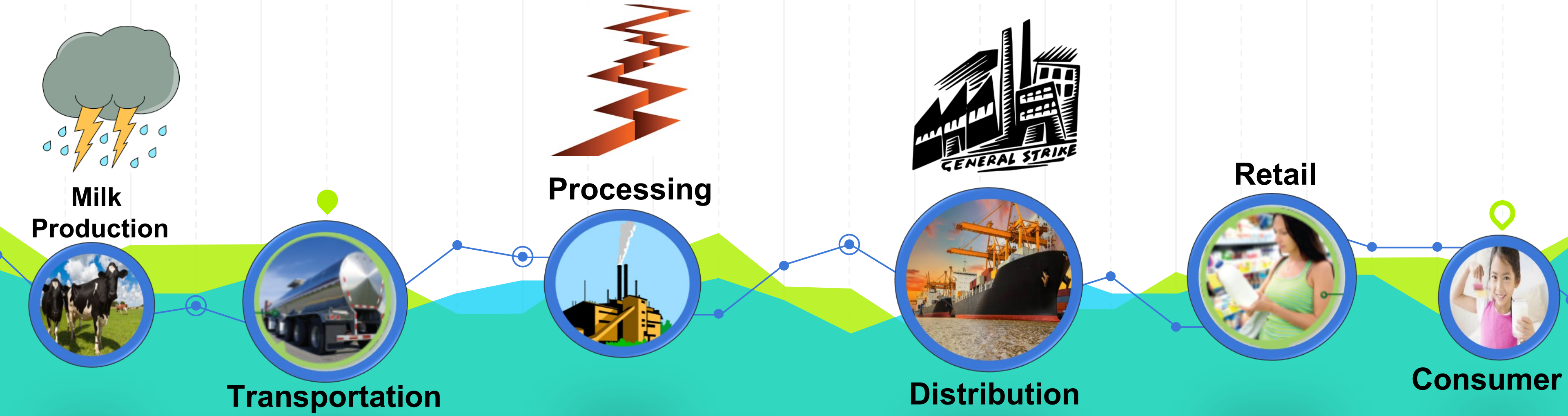
Why Supply Chain Resilience



Supply Chain Resilience Report 2016 (BCI, 2016)

66% – lack full visibility
59% disruptions – **tier 2nd or 3rd suppliers**
40% do not analyse the source of disruption

- Drought
- Tsunami
- Food Safety Issue
- Supply Shortage
- Port Strikes
- Pandemic

Supply Chain Disruptions

*Note: Sources are mentioned in notes

Literature Review

Resilience (Reactive posture)

- ***absorb*** *and* ***bounce back*** *after a disruptive event*
- *capacity to* ***balance*** *and* ***sustain*** *desired state*
- *Reactive posture*

Vogus & Sutcliffe, 2007; Weick, Sutcliffe, & Obstfeld, 2008

Resilience (Reactive + Adaptive approach)

- *dynamic capability of system to return to* ***original state*** *or achieve a* ***new and more*** *favourable state*
- ***survive*** *crisis and* ***thrive*** *in a world of uncertainty*
- *Adaptive approach*

Christopher & Peck, 2004; Fiksel, 2006; Sheffi & Rice Jr, 2005; Seville et al., 2008

Literature Review

Supply Chain Resilience

SCRES Definition – Four stages of Disaster Life Cycle, Readiness, Response, Recovery & Growth

SCRES Capabilities – Flexibility (sourcing, process, order fulfilment), Redundancy, Collaboration, Visibility, Agility, Information sharing, Culture & HRM

SCRES Characteristics – Control, Coherence & Connectedness, Cost effectiveness, Speed of recovery

Research Gaps Limitations

- Limited focus on Disaster Life Cycle – Structural changes/behaviour of supply chain network
- Most of the research work is based on a single view or dyadic view – a limited focus on a wider-network view

(Blackhurst, Dunn, & Craighead, 2011; Hohenstein, Feisel, Hartmann, & Giunipero, 2015; Jüttner & Maklan, 2011; Pettit, 2008; Ponomarov & Holcomb, 2009; Sheffi & Rice Jr, 2005)

Research Highlights

Research aims

To understand structure changes of a supply chain network (SCN) during and after a disruption?

Research Highlights

- Case Study Methods
- Three supply chain disruptions
- Structural/behavioural changes in SCN

(Saldana, 2016, Miles, Huberman, and Saldana, 2014)

Supply chain disruptions

Disruption 1 – Fire at Aisin's plant

- Toyota's Response
- Aisin Response

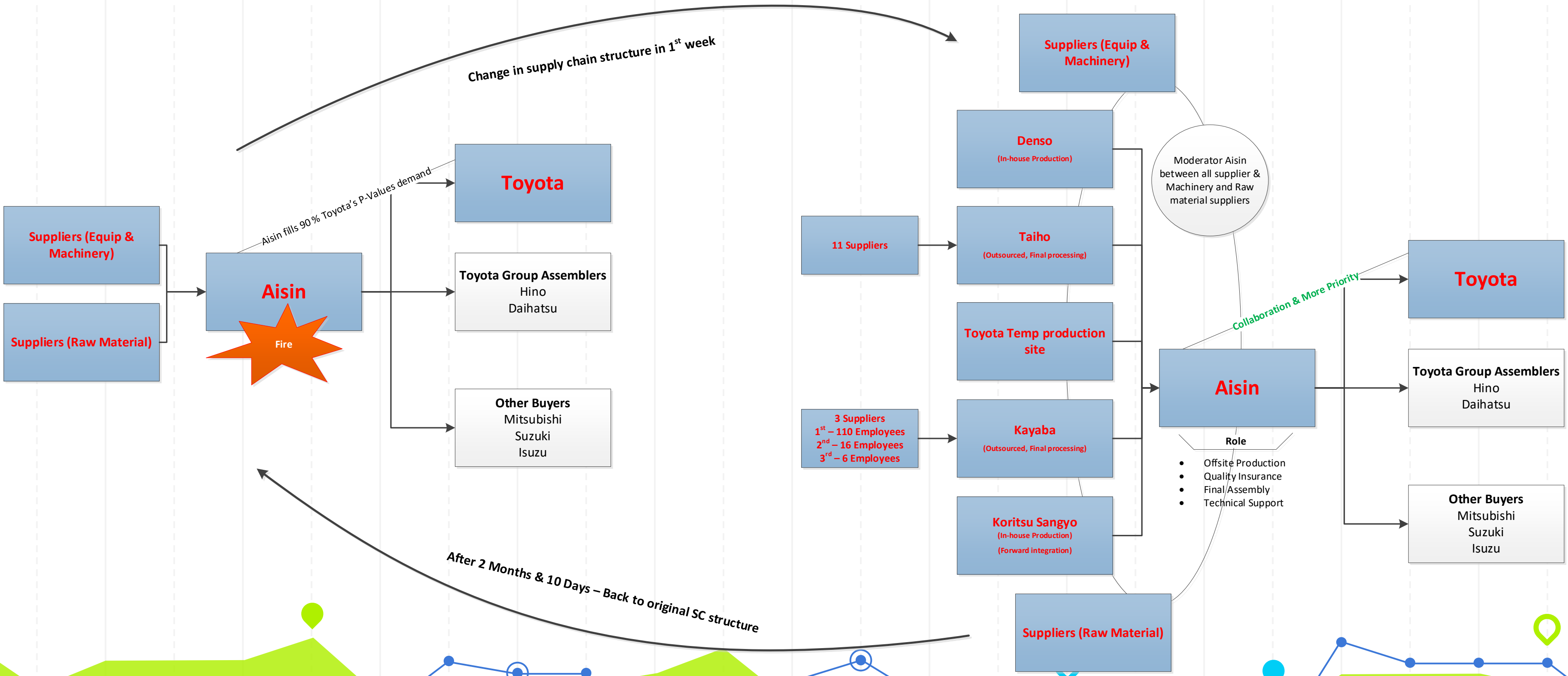
Disruption 2 – Fire at Philips Plant

- Ericson Response
- Nokia Response

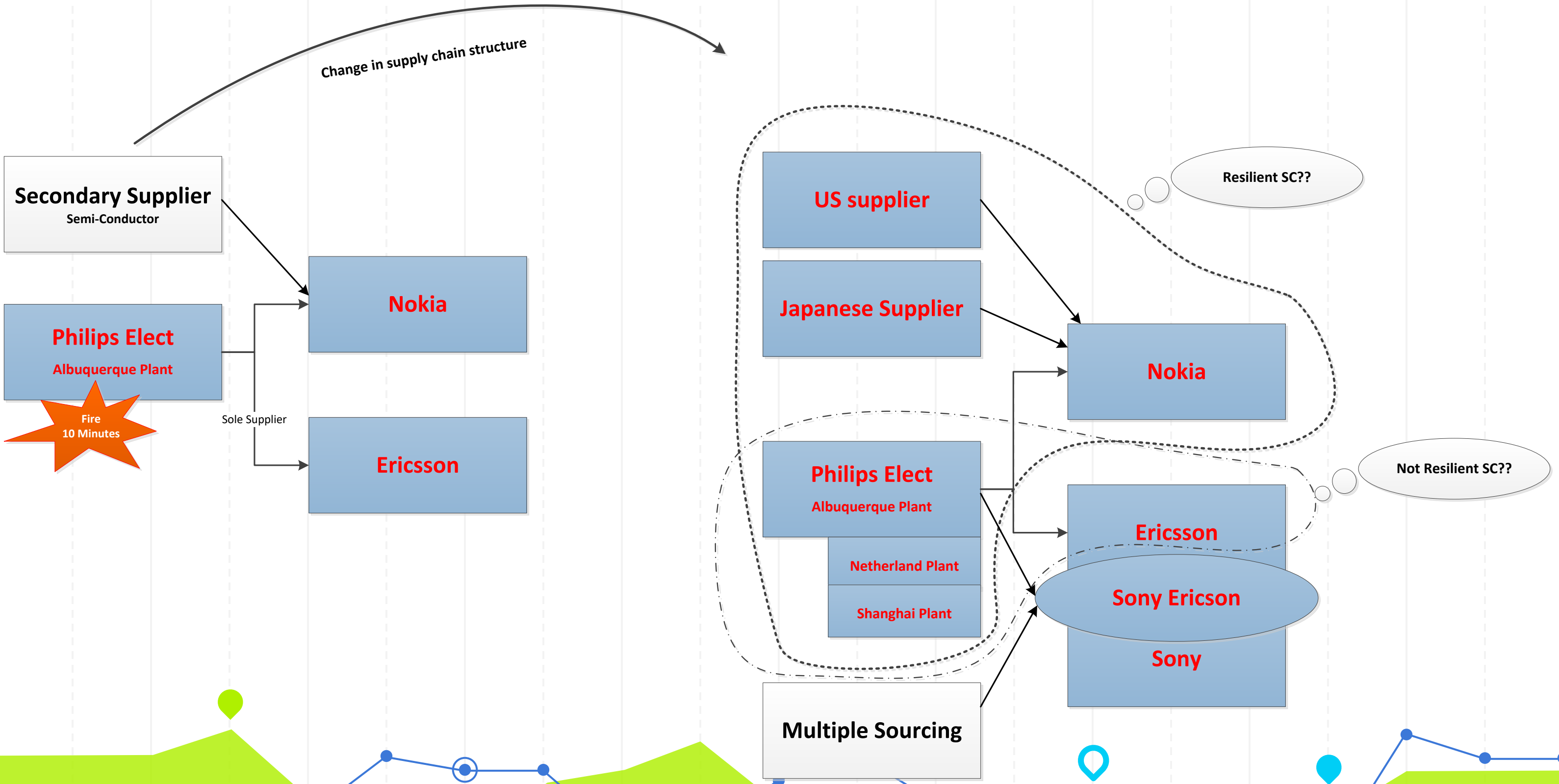
Disruption 3 – Battery recall Nokia Global

- Nokia India Response

Disruption 1 – Fire at Aisin's plant

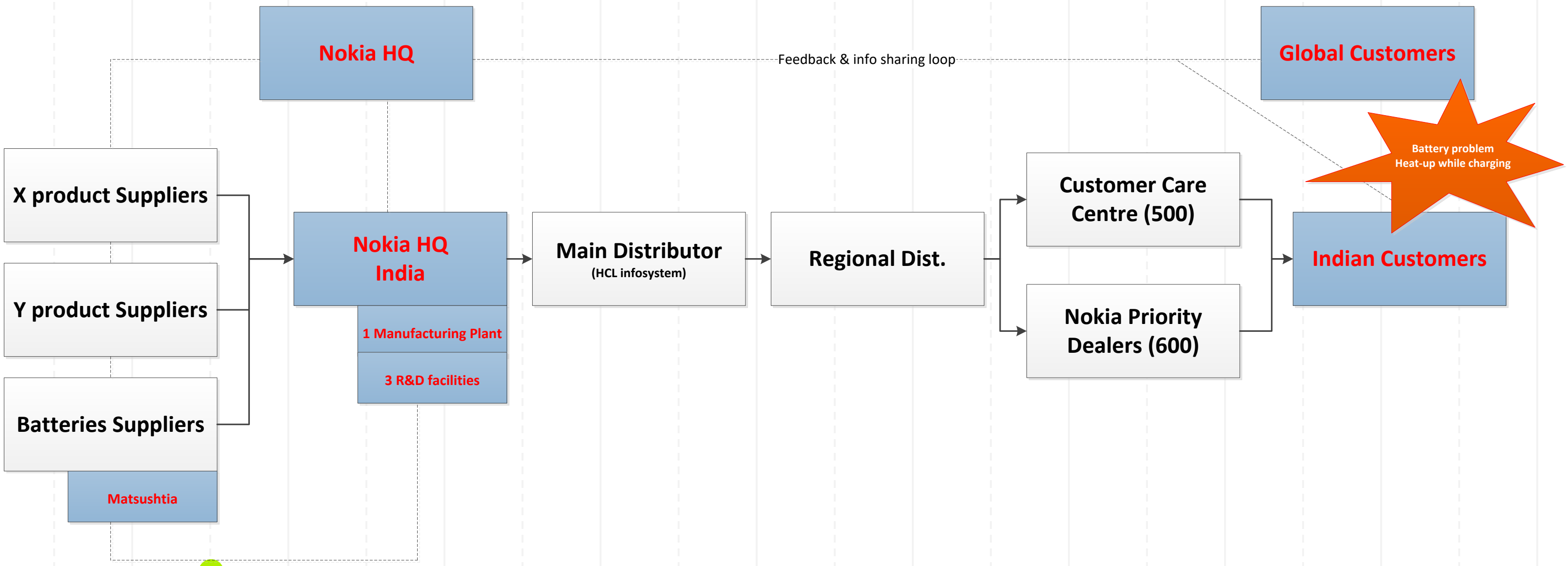


Disruption 2 – Fire at Philips Plant



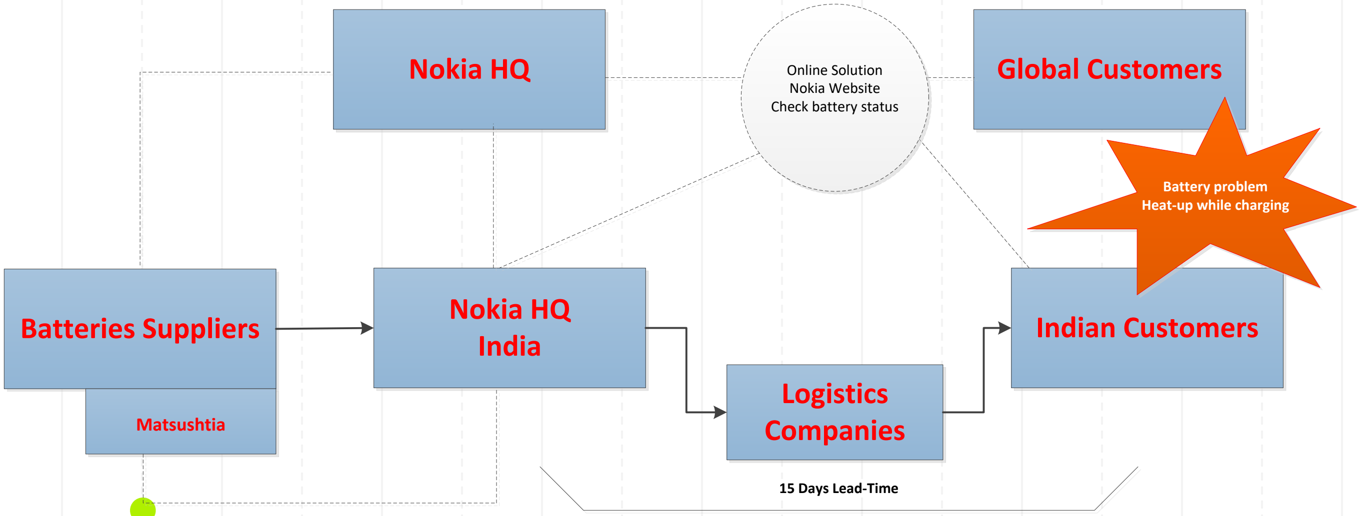
Disruption 3 – Battery recall Nokia Global

Normal SC



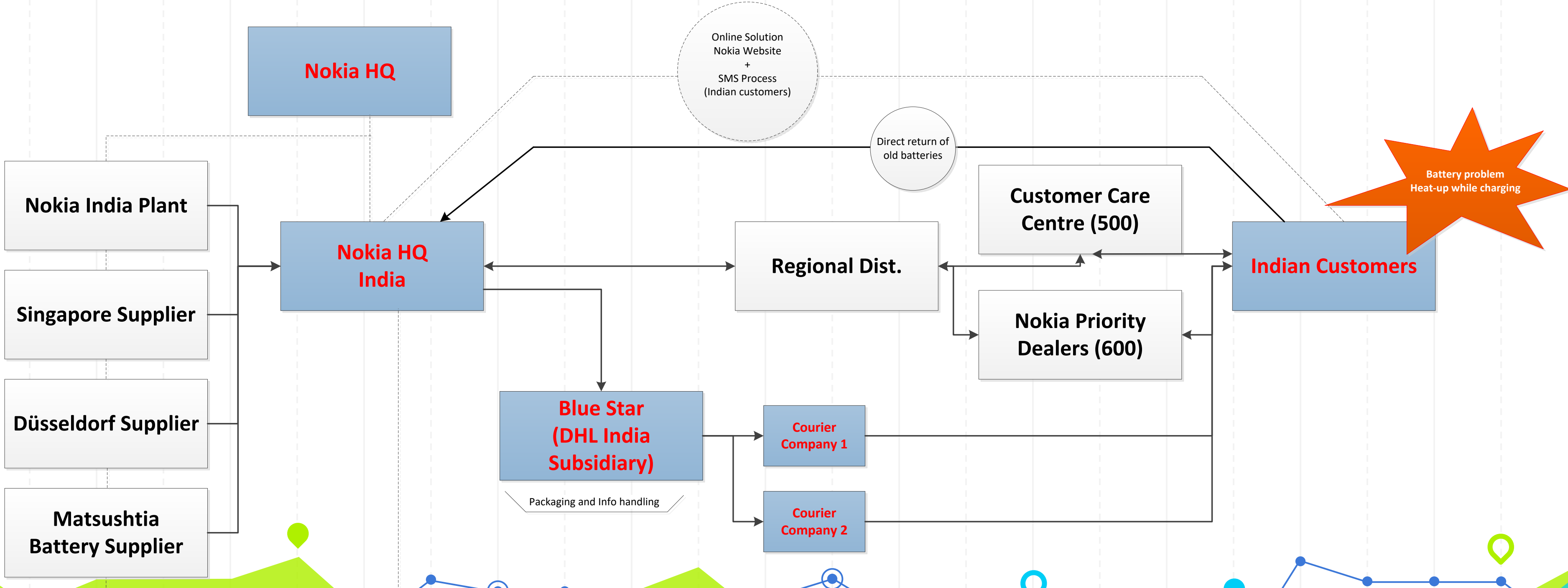
Disruption 3 – Battery recall Nokia Global

Planned supply chain structure of recall



Disruption 3 – Battery recall Nokia Global

Changed SC during disruption



Findings and analysis

Cases		Level/Scope of involvement			Post Disruption status			
		Individual	Subset of SC	Full SC System	Cost/loss	Speed	Achieved Pre-disaster	Achieved new/ more desirable state
Fire at Aisin's Plant	Toyota's Response		Mainly 6 Firms		7.8 billion (Yen) – Revenue	17 days	X	
	Aisin's Response		Direct (62 Firms) Indirect (150 Firms) Upstream of chain (except Toyota)		160 billion (Yen) – Revenue	2 months and 10 days	X	
Fire at Philips Plant	Nokia's Response		Mainly Nokia, Philips and 2 other supplier were involved		3 % increase in Market share	Little variation		X
	Ericson's Response	Isolated response			3 % lost in Market share	Never achieved pre-disruption status		
Battery Recall at Nokia	Nokia's (India) Response		Mainly Nokia HQ India & Singapore, manufacturing plant India, 2 suppliers of batteries and 4 downstream players			4 Months	X	

Academic and Practical Contribution

Emerging Themes

- Power law distribution
- Strong role of hub firm
- Supply chain network flexibility

Practical

- Develop a flexible SCN
- Supplier contracts

Academic:

- Resilience & Disaster Life Cycle
- Network understanding

THANK YOU

Feedback and Comments?