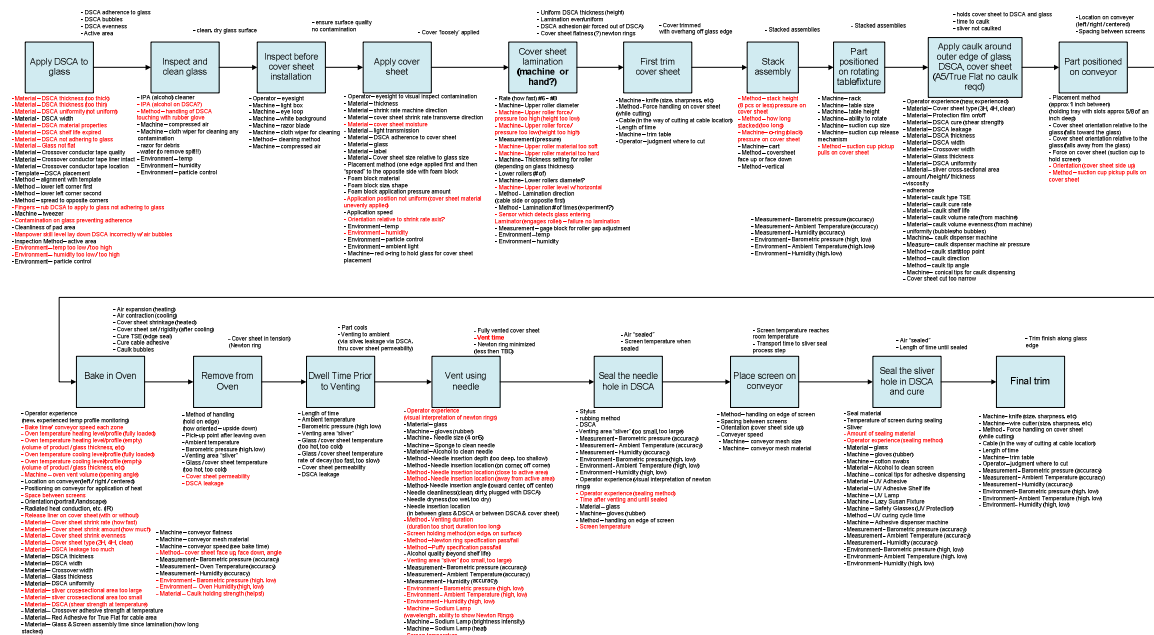
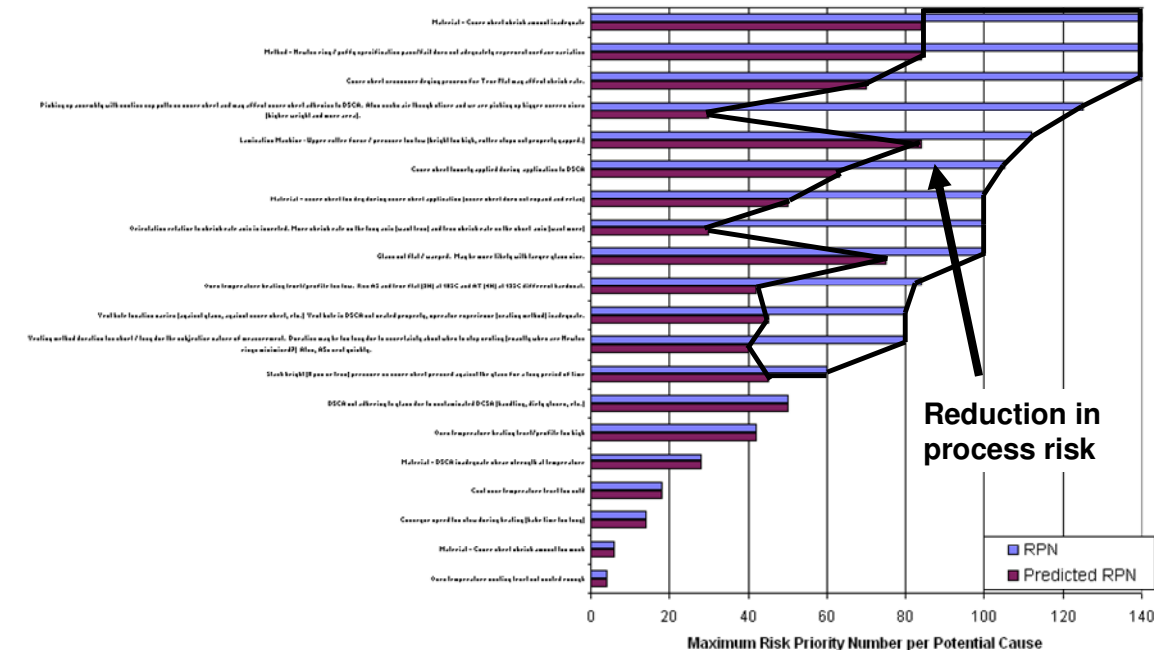


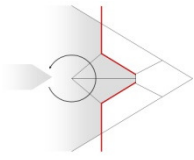
A manufacturing process for a touch screen display resulted in cosmetic defects. A cross-functional team was formed to study the process in detail. A process map was created with an extensive list of potential causes as follows:



Note that, since the total number of potential causes was so extensive, the team used engineering judgment to down-select the most likely potential causes given the problem statement. A failure mode and effects analysis (FMEA) was then performed. The Pareto analysis of risk priority numbers (RPN) of potential causes is shown below. Also included in the graphic is predicted RPN.



Reduction in process risk



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Note that some of the FMEA actions that address systemic or ongoing process issues were also ended up in the control plan. An example is provided below:

CONTROL SUBJECT				SENSOR		INTERPRETATION			ACTION	
#	PROCESS NAME / OPERATION DESCRIPTION	VARIABLE	ACCEPTABLE CONDITIONS	MEASUREMENT TECHNIQUE	SAMPLE SIZE AND FREQUENCY	CONTROL METHOD	SIGNAL	RESPONSIBILITY	RECOMMENDATIONS	RESPONSIBILITY
1	Incoming quality inspection	Glass flatness	< two waves/inch	Optical CMM or ping gage	1 per lot	Control Chart	Outside of control limits	Incoming Quality	May reject lot of defective glass or contact glass manufacturer	Supplier Quality

Actions taken as a result of the FMEA and control plan effectively eliminated the cause of the surface variation and increased yields from 65% to over 98%.