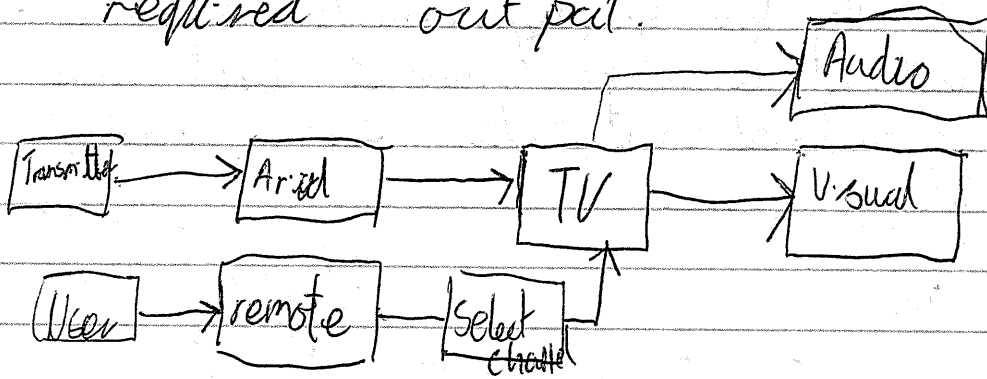


Luke Savin

1810 328

Systems Engineering

1) A system is a set of component or sub-systems working together as a whole, that takes an input and turns it into a required output.



2) Chance cause - In the inherent/intrinsic variate in the system/process (random)

Assignable cause - Is identifiable or specific ~~can~~ cause of variation

3) Operational - How ~~it~~ ^{the systems} operates to ~~for~~ ^{complete} a task
 Functional - Defines how the system does the task (noun)
 Non Functional - do not specify what the system has to do, but
 - Implementation ^{how well it does}
 - Performance ^{something and how well}
 - System ^{3 types}

4)

Customer Excitement	High	Expressed requirements that are sufficiently important to be verbalised by the customer	Delighted Requirements that cannot be articulated as the customer does not know they want it
	Low	Basic Obvious to the type of system, will not be mentioned by customer. Dissatisfied is not provided	Assumed Requirements that are white not basic but are taken for granted
		Low	High
		Customer satisfaction	

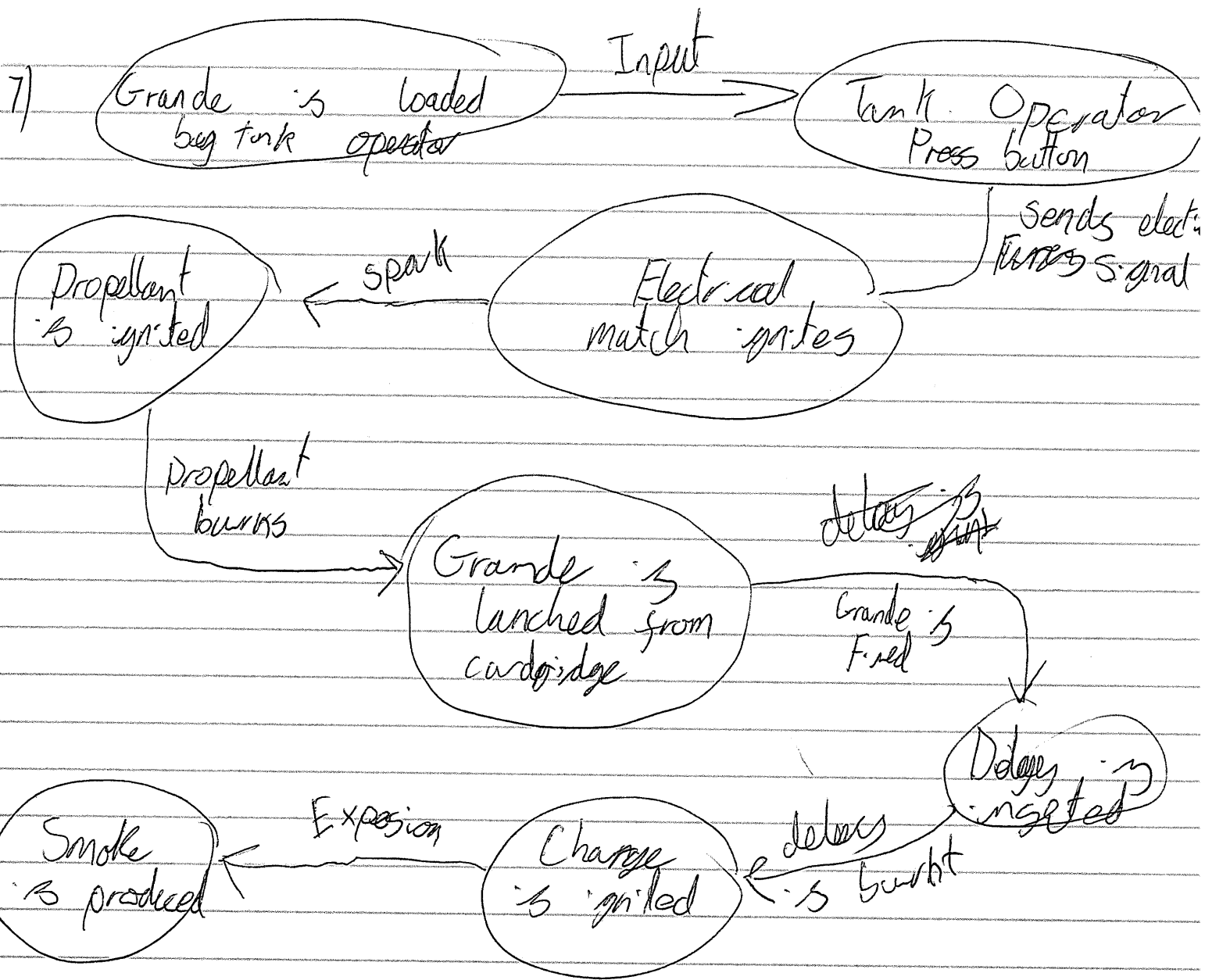
5) Too Much
Too little
Intermittent
Unintended
None

6) The ~~py~~ physical, chemical or other process that cause it to fail

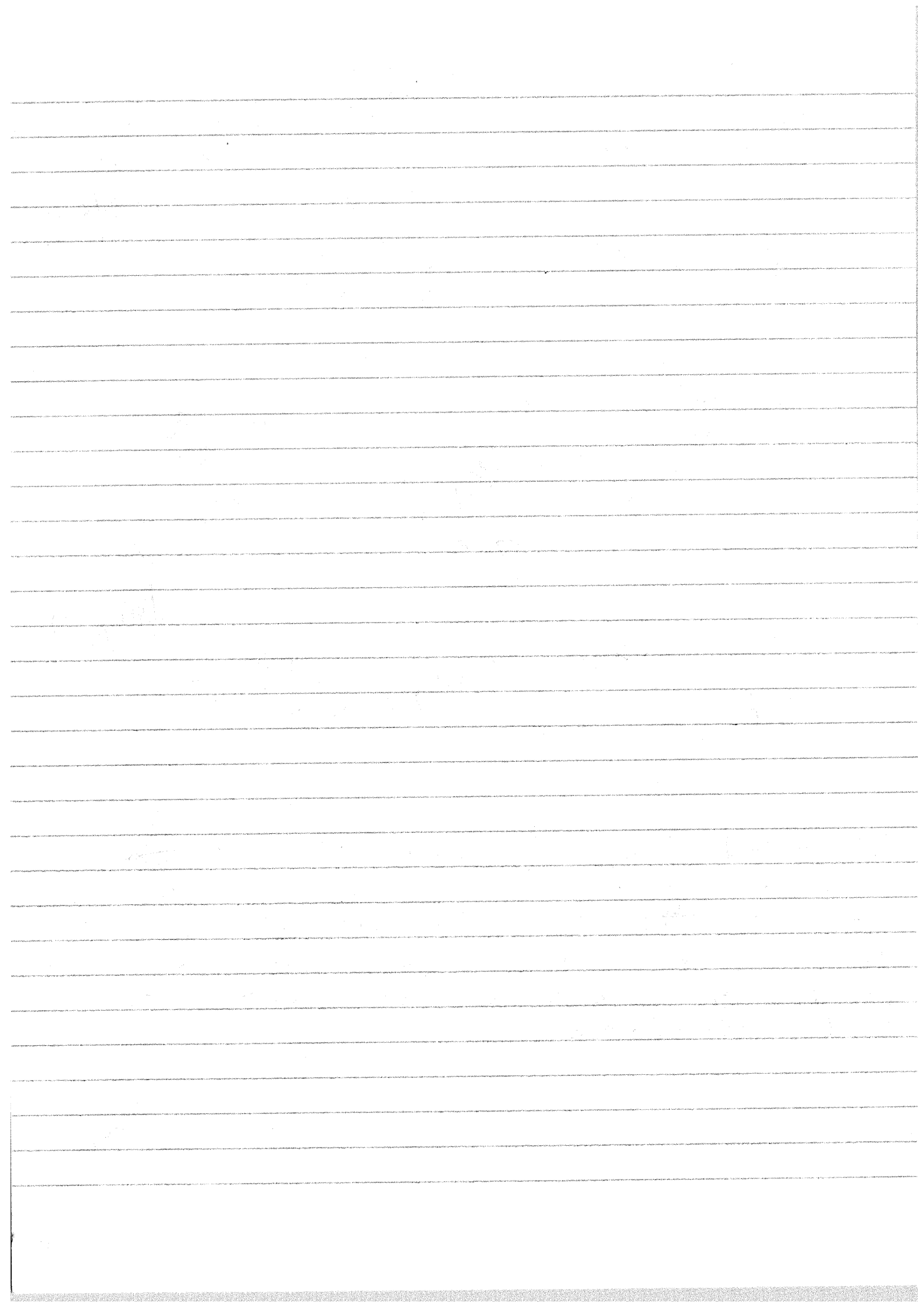
eg Too much physical bend on a ruler will cause it to snap

Use Case for Smoke Grenade

Use Case: A clear verb/noun or actor/verb/noun that communicates the scope of the use Case			
Use case for Smoke grenade for tank			
Author	Issue -	Reviewed	Date
Actors:- A list of actors who can engage in the activities described in the use case:-			
Manufacture – Builds and delivers			
Storeman – looks after smoke grenade when not in use			
Tank Operator – Loads and fires grenade			
Pre-conditions:- Anything that can be assumed to be true when the use case begins :-			
The grenade is well maintained and not damaged			
The Operator is fully trained in using it			
Grenade has not been tampered with			
Correct weather conditions			
Post-Conditions:- Anything that must be true when the use case is complete.			
Smoke has been produced			
The grenade has been fired 30 meters			
No damage to the tank or the operator			
Basic Flow:- The set of steps the actors take to accomplish the goal of the Use Case. A clear description of what the system does in response to each user action.			
1. Grande is loaded into firing cartridge 2. Tank Operator fires Grande electronically 3. Propellant is ignited 4. Grande is launched 5. Grande explodes 6. Smoke is produced			
Alternative Flow:- Captures alternative user/system interactions, such as what happens if data is entered incorrectly.			
Grande is damaged and goes off in firing cartridge or Grande doesn't fire far enough.			
Exception Flow :- The things that can happen to prevent the user from reaching their goal.			
Grande is not loaded			
There is no contact between the firing and grande			
Grande is damaged and not smoke is produced			



An FMEA look at each the ~~design~~ functions and describe how each one can fail. This also ~~also~~ let the designer know how each point can fail and can focus on designing them out or find alternatives.



9) ① Facility staff - As they approve the machine and order
② Cleaners/operators - ~~As they~~ it with their requirements
③

② Cleaners/operators - As they maintain the machine day to day

③ User / staff / students - As they ~~are~~ are the ones used and buy the coffee

A QFD takes the user requirement and the general requirement and shows how important each one is. From this it can set more specific targets and values to each of the requirement. By knowing this these more designed specifications a test regimen can be identified.