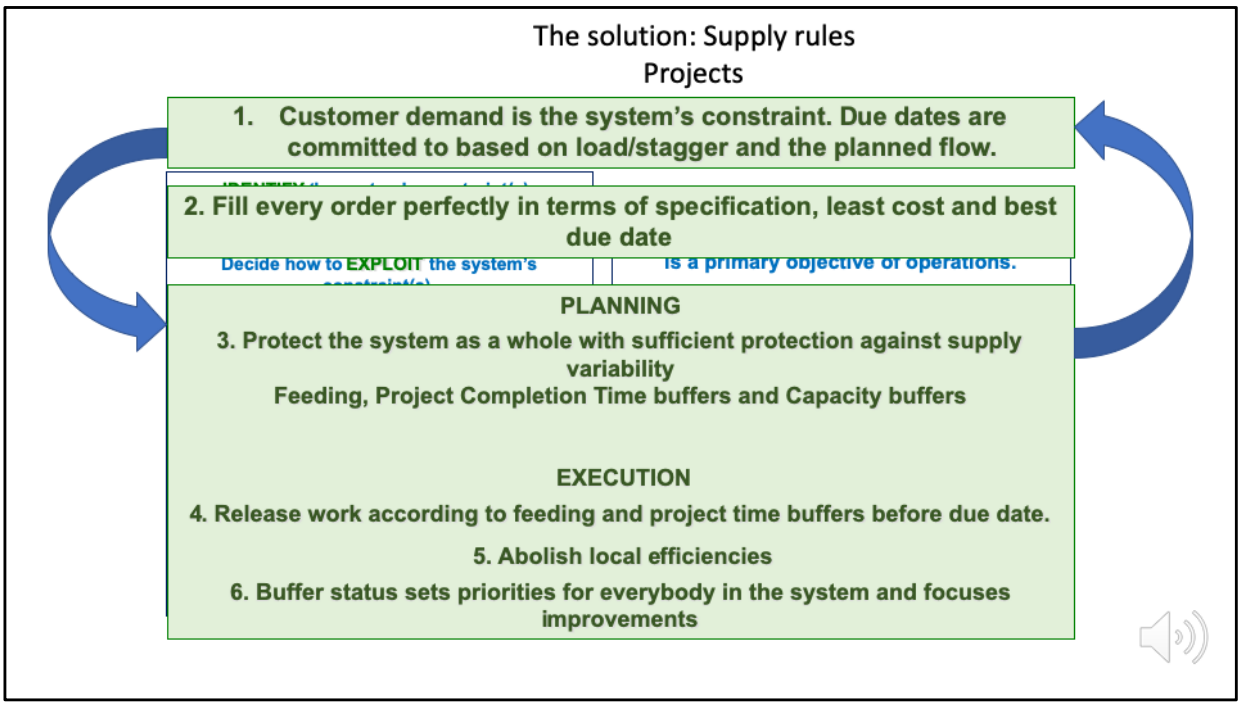

Projects as the means to deliver, is only necessary when the final product is unique and how to deliver it, the flow, is not known. Dr. Goldratt stated that the distinction between production and projects can be made by the ratio between processing (touch) time and lead time. When the ratio is less than 10%, it is production. When it is more than 50%, it is projects.

Projects are used in construction, installing new capacity, modifying capacity, building, manufacturing factory machinery, etc. End products can be a road, a bridge, a ship, a factory, an IT system, a strategic objective achieved, a large machine. The flow on a project could be repetitive but then it raises the question if it is not simply production. The need to make this distinction becomes unnecessary with the recognition that every delivery system is only about flow and that the difference is only in what is the appropriate protection and prioritization mechanism that will be the most effective in managing the flow.

Let's do a quick recap of the origin of these supply rules. The 5 focusing steps have been used to choose where the system's constraint has to be for ensuring exceptional service to the best customers - their demand is chosen as the system's constraint. The decisions to exploit the chosen customer demand is simply to fill all their orders

perfectly. The whole delivery system needs to be fully subordinated to this decision to provide the required capability. The first 3 steps has been established as the management system that will lead to better system productivity and Net Profit. The fourth step (elevate the system's constraint) is activated when more customers could be served exceptionally well. The 5th step is how to ensure that the system continuously improves.

We also established in course 2 that the supply rules fully support the 4 flow concepts as well.

Rule 1 states that customer demand should be treated as the system's constraint. In the project environment the customer demand is expressed in terms of a project due date, the money that is available to spend doing the work derived from the unique specification of the final product. It is only the specification or design of the final product that is known at the outset, or mostly known. The first step must therefore be to design the flow to deliver the product. In projects, this is the first step of planning and cannot be divorced from the 3rd rule. The protection required cannot be decided on without having designed the flow and defining the resources required to minimise the project lead time. Commitments cannot be made without the appropriate protection in the plan. I specifically use the word design for this action. It is a creative process that involves understanding task dependencies, how the resources should be planned for the shortest task lead times and when resource conflicts might occur. A commitment to the best due date or best expense plan can be made only after an iterative design process. We will discuss this in some detail in this course.

Rule 2: Fill every order perfectly. On or before the committed project due date, spending only the money available or less and deliver everything that has been specified.

Rule 3: This is part of planning. Protect the system as a whole with sufficient protection against supply variability. I am assuming that demand variability does not exist, or that actions can be taken to ensure that it does not exist. Is this a valid assumption? The challenge now is to devise a way to protect the system as a whole (the project) and to size the protection. In projects we use capacity, feeding and project completion time buffers as the protection mechanisms and the same logic as before to size these buffers. The size of the project completion buffer determines the project lead time and therefore the due date to which everything should be subordinated. This is the demand that is treated as the system's constraint. Projects have to be staggered when more than 1 project has to be delivered with the same resources. This stagger have to take into account the finite capacity of the resource set. A simple rule such as controlling the level of work-in-progress (WIP) is often

sufficient. This rule acts as a Kanban system - completion of a project is the signal to release the next one to WIP. No commitment can be made to due dates without staggering of projects in this environment.

Rule 4: Release work according to feeding and project time buffers before the due dates. It is not necessary to release earlier because the required protection against variability is planned, not left to chance as is the case by trying to maximise “float” by early release. Release as soon as possible is one of the most prevalent local optima that has to be abolished.

Rule 5: Abolish local efficiencies. The most devastating local efficiency in project management is the use of task due dates as the primary performance metric. It has the effect that task duration estimates are turned into commitments and causes the behaviour of resource to plan, to hide and waste local safeties. This phenomenon is also present in managing expenses. When expenses are planned with a fixed price per task, then protection must be built in on the local/task level and is then unavailable to the rest of the project. It is also common practise to plan tasks in too much detail with scheduled start and finish times that becomes local efficiencies during execution. More on this later.

Rule 6: Buffer status sets priorities for everybody in the system and focuses improvements. The data required for buffer status is the latest estimate of remaining duration. This becomes the means for resources to know what to do next. This is the task priority. Task completion times and priorities are the latest view of the future that resources need to be able to prepare to start when the preceding task is complete. Similar to the latest GPS driving apps that predicts when the trip will be complete.

We now will discuss rules 3 to 6 in more detail. Planning and execution.