Breakout Session E-3: The Ideal Goods-to-Picker System Characteristics

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Goods-to-person (or robot) systems are an effective means to collect and assemble the items to fulfill a customer's order. The best system would be able to satisfy all the requirements and characteristics shown above, but many of these can be in conflict when the economics of the system are considered.

Designing the system can be thought of as an optimization problem. We looked at both requirements (analogous to constraints) and characteristics (objectives). Depending on the system being implemented some of the characteristics might turn into constraints. We deliberately kept the requirements to a somewhat modest set because in the optimization analogy, any constraint can be, with an appropriate cost parameter, be converted into a characteristic (objective function value).

The above was motivated by the fact that GtP design is a complex endeavor. There are many trade-offs – costs, throughput, efficiency, system reliability and failure, robustness, etc. The difficulty in designing a highly automated, efficient, and cost-effective picking solution was noted.

The discussion was therefore narrowed down to how can items be "collected" rather than "picked." In other words, the group's discussion focused on solving the challenge of removing the picking from current goods-to-person (or robot) systems. What mechanical systems can be used to do so and how might those mechanical systems have to be different for the different types of products?

The rest of the discussion proceeded as follows:
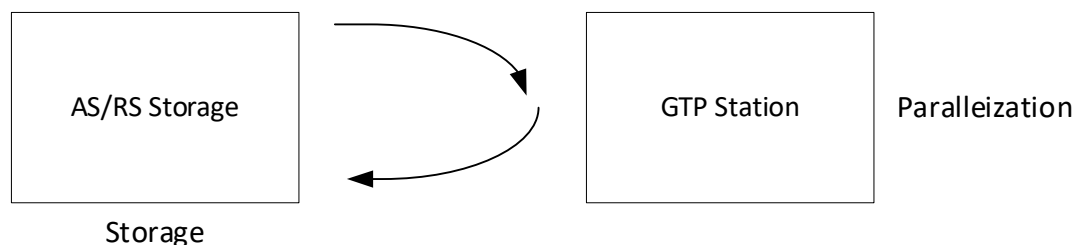
Singulate->Collect->Assemble

But why not store in pickable units (pick dispense)? This makes the picking function go away (GTP)!
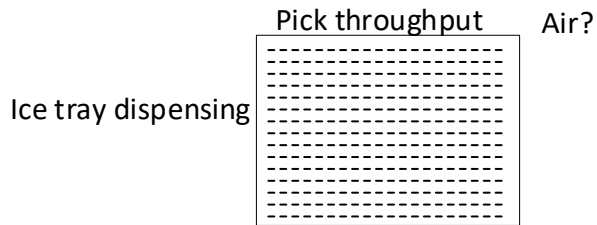
Requirements	Characteristics
Storage constraint	Human well-being
Throughput constraint	Sequencing
Piece picking (Ecommerce)	Waste
Break bulk	Accuracy
Replenishment	Sustainability
	Maintainability
	Density
	Modifiability
	Scalability
	Minimize weight moved
	Noise
	Protect parts
	Pick throughput
	Broad set of products
	Integrability
	Responsiveness

Other ideas:

Pick throughput   Air?

Ice tray dispensing

Picture of Easel board: