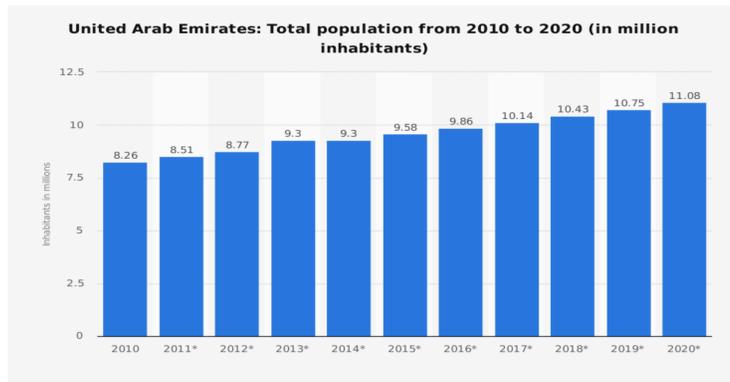


# CONSTRUCTION WITH CONTOUR CRAFTING

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## Situation

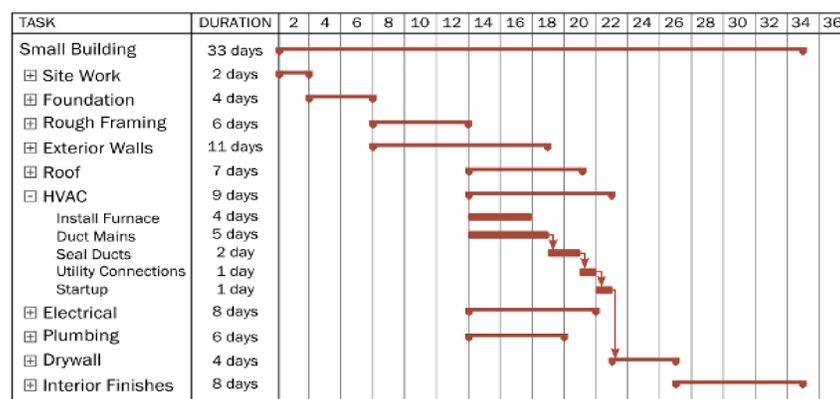


[1]: UAE population forecast

- Focusing more on refurbishments than new properties
- The emirate's population is growing 7% year-on-year, meaning that at least 75,000 new properties are needed each year to keep up with demand
- The number of properties for sale in Dubai is beginning to fall below the level needed to meet demand from buyers
- Massive push for affordable housing which would require the cost of land to be adjusted

## Problems

- Subcontractors mistakenly working off of an old set of blueprints
- Additional cost occurring in the course of construction. Unforeseen conditions
- Well intentional mistakes
- "How can I guarantee this work will proceed as quickly as possible?"



[2]: Gantt chart example for time taken to build a house

## Solutions



Contour Crafting, or 3D printing, is the process of manufacturing three dimensional objects from a digital design or model.

"3D printers are used to create and deliver goods, vastly cutting shipping and labor costs" [3]

### Rapid prototyping (RP) [3]

Using CAD/CAM , rapid prototyping allows manufacturers to produce prototypes much faster, often within days or sometimes hours of de signing it. Takes approximately 10% of the time of a traditionally constructed building.

### Use of CFRP [4]

3D printing with carbon fiber reinforced plastic (CFRP) offers unique properties that are increasingly sought out., which are extremely thin fibers measuring about 5-10 microns in diameter, and have a higher strength-to-weight ratio than almost any other manufacturing material.

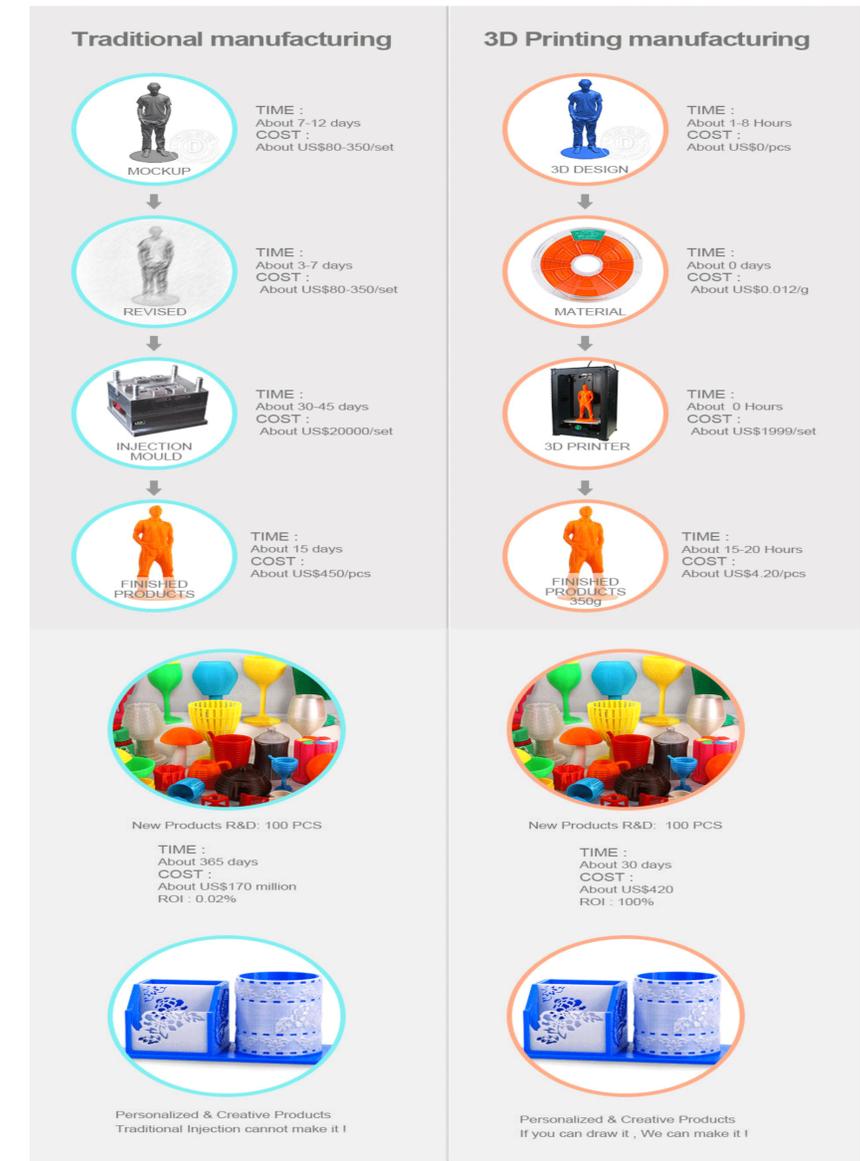
### Flexible Supply Chains [5]

Production does not need any special tooling nor casting, so shifting the production to a totally different object is completely easy and immediate. Redesigning stages has no influence in the production costs.

### Unlimited Designs [5]

Contour crafting makes possible the manufacture of any design regardless the design complexity and allowing the production of integrated components. manufacturing constraints related to machining, molding, etc.

## Evaluation



## References

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- [5] Brett, "Are The Additive Manufacturing Technologies Able To Replace The Conventional Ones?" 2015. [Online]. Available: <http://3d-printing-engineering.com/easyblog/entry/additive-manufacturing-technologies/>. Accessed: Nov. 16, 2016.