Building For The 21st Century
Why We Need Digital Construction
About DIRTT

Personalized prefab. Really.

Build the perfect interior space for what you need now — and whatever the future brings. Designed to respond to your needs for any place, from healthcare to school or office to home life. This is digital construction at its best.

- 400 Million in Annual Revenues
- Publicly Traded on the TSX – DRT & NASDAQ DRTT (USD)
- 1,200 DIRTThbags Strong
- 7,800 clients worldwide.
- Over $1 billion of our solutions shipped since launching in 2005
- Lead the industry with developing first PCR\textit{(product category rule)} for transparency & has an Environmental Product Declaration.
- 4 Factory Locations In North America
- Work With 290 of 2018’s Fortune 500 Companies
- Corporate > Healthcare > Education
- Design Assist | Multi-Trade Subcontractor
- Most sustainable method of interior construction
Agenda

1. Why?
2. How? The 3 Key Elements
   A. Software
   B. Solutions
   C. Process
3. Projects
Why? A few of the key challenges on how we build interior space?

- Cost uncertainty
- Unpredictable schedules
- Vision does not match end result
- Living in obsolescence.
- Skilled labor.
- Fixed in place.
- Wasteful process.
And in the end they will not meet today’s or tomorrow’s Smart building goals.

Some statistics that advocate for a Smart Buildings focus:

- In urban settings, 87% of a day is spent inside a building
- 80% of all mobile usage is inside a building
- Smart buildings support sustainability and a smart sustainable building can reduce energy usage from 40% to an astounding 70%
- In certain municipalities, office space utilization is at 48%, leaving much room for smart, flexible space utilization
- Improved workplace design, lighting, and air quality can lead to an uplift of 30-40% in employee productivity

• Health, wellness and productivity as supported by the workplace are key trends in corporate human resource management
The 3 Key Elements
**SOFTWARE · SOLUTIONS · PROCESS**

**Autocad/Revit - 1986**

**Design planning** → **Construction** → **Occupancy**

**ICE Software - 2004** → **Manufacturing floor** → **Buildout** → **Adaption**

**Benefits:**
- Cost Certainty
- Visual Certainty
- 70/30 vs. 30/70 material to labor
- Reduces punch list

**Benefits:**
- Speed of construction
- Less Skilled Labor needed
- Clean Construction
- Higher Quality | Fit & Finish

**Benefits:**
- Reuse
- Flexibility
- Access to infrastructure
- Quicker changes – plug & play
Our Unique DNA:

Backwards Compatibility
- Legacy product offering
- Sustainability
- Increased life cycle

Core
- Universal interfaces
- Standardized design principals

Future Design
- New designs honoring the DNA
- Allowing new aesthetics / functionality
Job-site: perimeter finishing, HVAC, lighting, ceiling, fire/security
Historic Process

Program
- Design Development LOD 200
- Schematic Design LOD 100

Construction Documents LOD 300

Fabrication LOD 400

Permit / Procurement

Modular Process ~ 30% Reduction in Project Delivery Time

Program Aggregation LOD 100

Virtual Building Design LOD 300

Fabrication LOD 400

Construction

6 to 9 months
Occupancy
Agile Flexible Environments
Summer 2014 initial buildout.
Summer 2018: reconfigure & relocate entire install to 2nd floor
Dismantled in 3 days
Employees remained at their desks
Lack of noise & debris
Less loss of productivity and employee discomfort
IF this project were built conventionally.

- Original build: 3,801 lbs of debris generated
- Original build demo: 13,303 lbs of debris generated
- New build: 5,461 lbs of debris generated

Due to offsite construction methods.

- Total of 22,565 lbs of debris were diverted from the landfill
- 2 standard garbage cans of waste were generated in the entire project
Reuse is Real:

- Complex reconfigure, 98% reuse of original materials
- Use technology to calculate materials reused & new ones needed
- New solutions arrived in under 3 weeks
- Reconfigured install took 7 days
- 2 standard garbage cans of waste were generated in the entire project
So, Who’s Building This Way?
more people than you think. less than would benefit.

DIRTT has delivered interior construction projects to more than 7,800 clients worldwide. We’ve shipped over $1 billion of our solutions since launching in 2005.
- 38,875 Square Feet
- $45/ Square Foot
- 9 Week DIRTT Construction
- 15,000 Square Feet
- $67/ Square Foot
- 5 Week DIRTT Construction
Portland Tech firm, new headquarters in Pearl West building. Cold shell, low density, low aesthetics.

$ 53,000 USF (over 3 floors)
$ 19 SF (25% of construction)
Total TI Construction cost: $ 70 SF
$ 58,000 USF
$ 20 SF (30% of total construction)
Total TI Construction cost: $ 62 SF

Renovation of existing one floor building in Hillsboro for headquarters.
Warm lit shell, low density, medium aesthetic.
Environmental Statistics:
Over **15,820lbs** of drywall waste prevented from entering the landfill.
**65lbs** of paint VOC’s & **16lbs** of drywall mud & tape based VOC’s prevented from off gassing.
**32% recycled content** in wall solution
**44% recycled content** in millwork solution
**1.18% bio-based content** in wall solution.
**30% power savings** with use of PON networks
Thank You!
DIRTT Environmental Solutions

Pam Armstrong
parmstrong@dirtt.net
971.221.9288