Set-Based Design
A Family Story

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ASNE Design Sciences Series:
Set-Based Design
Washington DC
Background

• Fall 2016
• Grace Doerry, age 20
• Junior, Wentworth Institute of Technology, Boston, MA
• Construction Management Major
  – Coursework in Fall 2016
  – COOP in Spring 2017
  – Coursework in Summer 2017
  – COOP in Fall 2017
  – Coursework in Spring and Summer 2018
  – Graduate in August 2018
• Boyfriend in Seneca Falls, NY
Problem Statement

• Early December 2016
• The Phone Call
• I’m Pregnant
• What do I do?

DAD: How about Set-Based Design?
Design Variables

• Stay at WIT or go to another college?
• Where to do the Fall 2017 Coop?
  – Boston
  – Upstate New York
  – Washington DC
• Would Boyfriend move to be with Grace and child before Grace graduated?
  – Washington DC
  – Boston
  – Stay in New York
• When would Boyfriend move?
  – Fall 2017
  – Spring 2018
  – Post graduation
Set Reduction Process

- Grace challenged to create 50 different alternate paths: created 30.
  - Forced to consider many varied possibilities.
  - Feasibility was not considered an obstacle at this point.
- Eliminated about half based on an initial assessment of feasibility.
- Researched alternatives
  - Different schools
  - Spoke with Department Head and Dean of Students to determine what was necessary to graduate on time
- Based on research reduced set to 11.
- Performed cost estimates on 11 alternatives.
- Reduced to 5 based on
  - Cost
  - Personal Preference
  - Ease
  - Decision to stay at Wentworth (with guarantee to graduate on time)
  - 2 based on 2\textsuperscript{nd} Coop in New York, 3 based on 2\textsuperscript{nd} Coop in DC.
- Reduced to 3 when unable to secure Coop in New York and offered Coop in DC.
- Reduced to 2 when Boyfriend chose to stay in New York during 2\textsuperscript{nd} Coop to keep job and earn money.
- Remaining decision was whether Boyfriend would move to Boston or not for the Spring and Summer terms.
Outcome

- Aria born in June 2017
- Grace’s Feedback on SBD
  - Empowering: put her in control of her life and the situation
  - Confidence in solution: had a complete understanding of the “design space”
    - Chose Option 1
    - Avoided second-guessing choice
    - Really understood Option 1