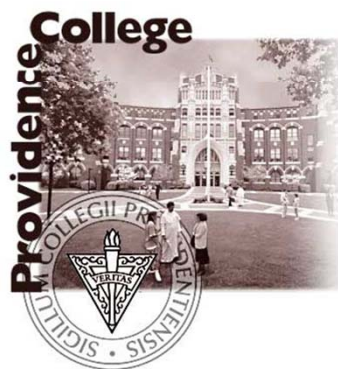


The Role of STELLA in Facilitating the Design of a Public Toilet in Ghana

Stephen Mecca, Ph.D.
Professor
Engineering-Physics-Systems
Providence College
smecca@providence.edu

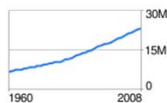


- Founded 1917
- 3600 Undergraduates
- 105 Acre Campus in Providence, RI
- Liberal Arts & Sciences
- Engineering-Physics-Systems
 - 3-2 Engineering
 - Applied Physics
 - Systems Science
- Research
 - Magnetosphere
 - Atmospheric Physics
 - Spectroscopy
 - Systems Dynamics
 - Complex Systems

outline

- Context of the problem
- Scope of work at Providence College
- Public Toilet design features
- STELLA models used
- What lies ahead

context - Ghana



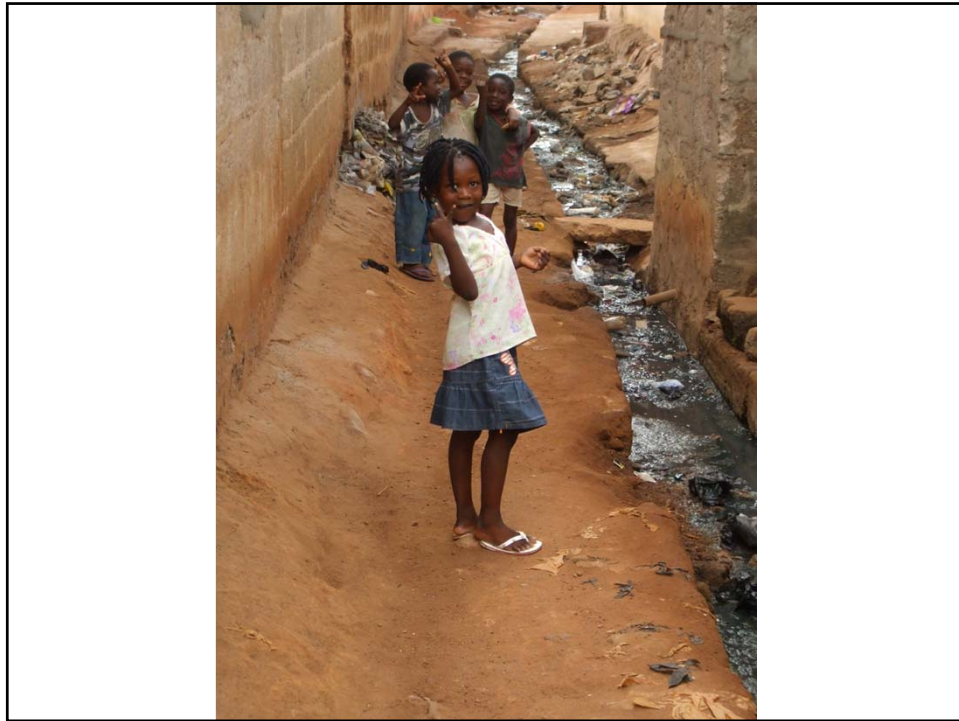
Population

- 1 doctor per 14,000 people (1:92,000 in the north)
- Malaria on the rise
- Infant mortality rising
- HIV/AIDS estimated at ~2%; 2.6% among pregnant women
- Polio is back, but promises to be eradicated (again)
- 60 – 70% of all disease attributed to sanitation – public toilets



<p>why?</p> <p>Sanitation Health Dignity More</p>	<p>OPEN DEFECAATION</p> <p>Open defecation: Defecation in fields, forests, bushes, bodies of water or other open spaces, or disposal of human faeces with solid waste.</p>	<p>•51 % of all people in sub-Saharan Africa are on the “open defecation” or “unimproved” rungs of the ladder.</p> <p>•“2.5 billion people worldwide are without improved sanitation” ..UNISEF-WHO report</p> <p>•We talk of water-borne disease, but it is not a water problem but a problem of water contaminated by feces. It’s a sanitation problem.</p>
	<p>UNIMPROVED</p> <p>Unimproved sanitation facilities: Facilities that do not ensure hygienic separation of human excreta from human contact. Unimproved facilities include pit latrines without a slab or platform, hanging latrines and bucket latrines.</p>	
	<p>SHARED</p> <p>Shared sanitation facilities: Sanitation facilities of an otherwise acceptable type shared between two or more households. Shared facilities include public toilets.</p>	
	<p>IMPROVED</p> <p>Improved sanitation facilities: Facilities that ensure hygienic separation of human excreta from human contact. They include:</p> <ul style="list-style-type: none"> - Flush or pour-flush toilet/latrine to: <ul style="list-style-type: none"> - piped sewer system - septic tank - pit latrine - Ventilated improved pit (VIP) latrine - Pit latrine with slab - Composting toilet. 	



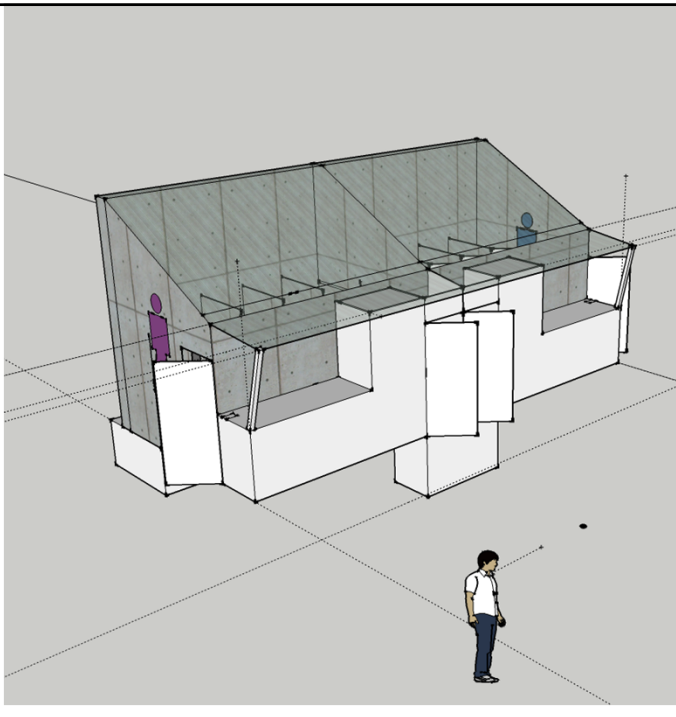


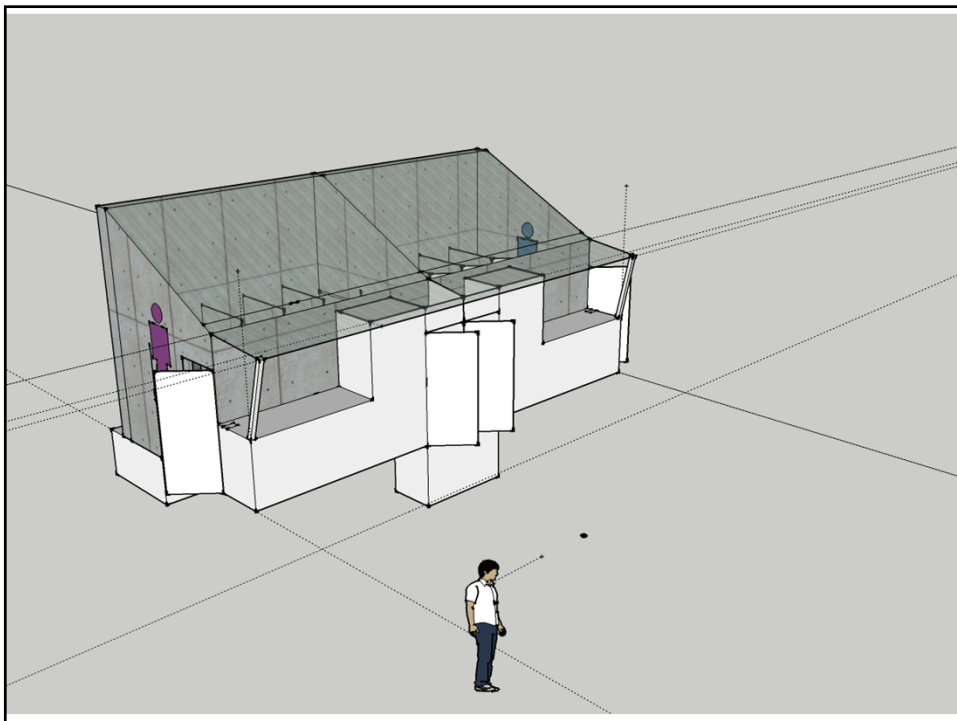
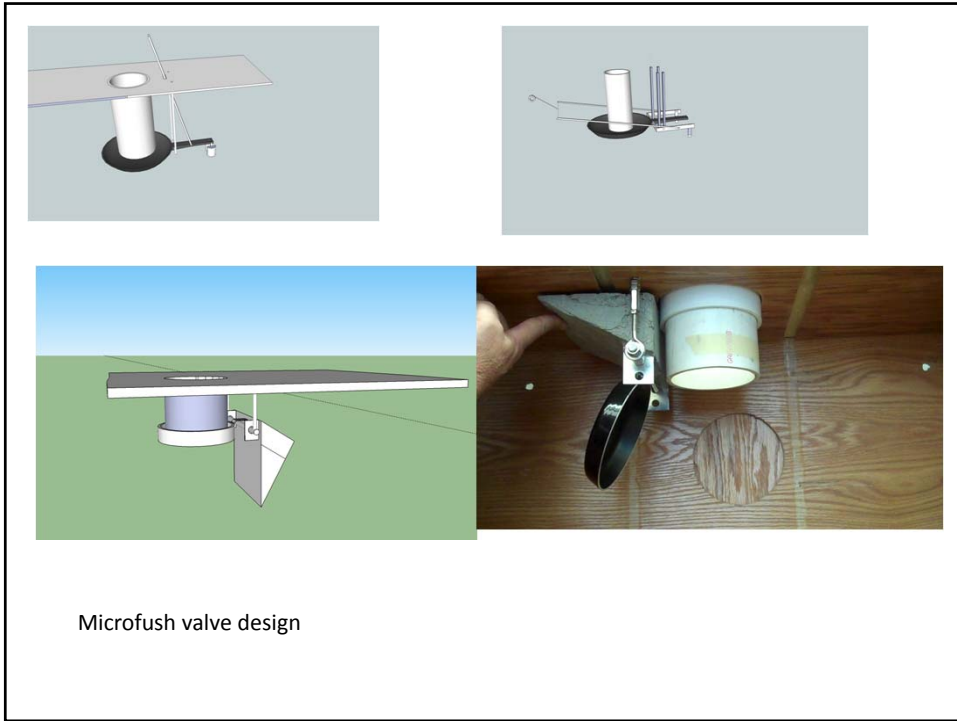
work at Providence College

- Analysis of the system
 - Physical factors
 - Facility design
 - Waste issues (worked with Ghanaian engineer's Biofil digester and designed a Patent-in-Process microflush valve)
 - Operations
 - Financial factors

what?

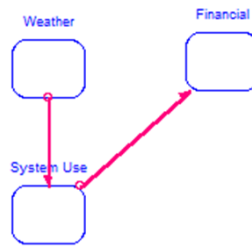
Sanitation
Health
Dignity
More



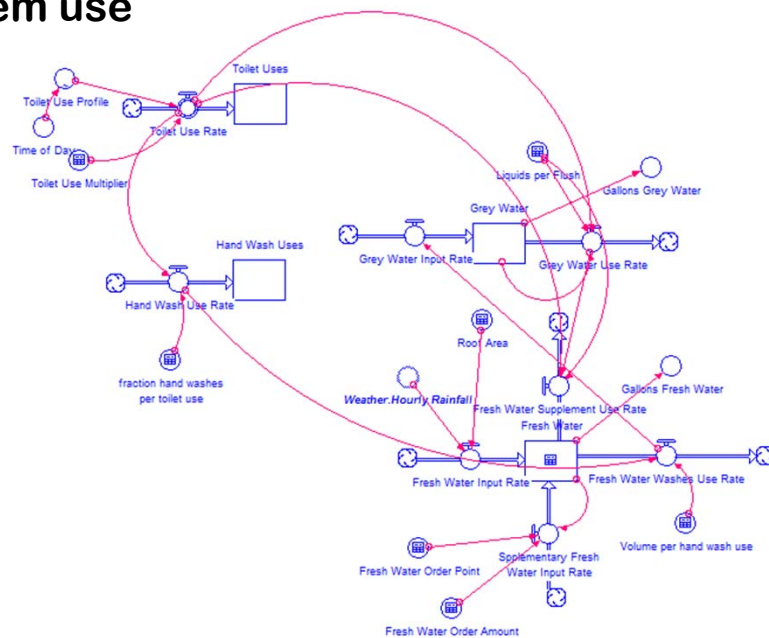


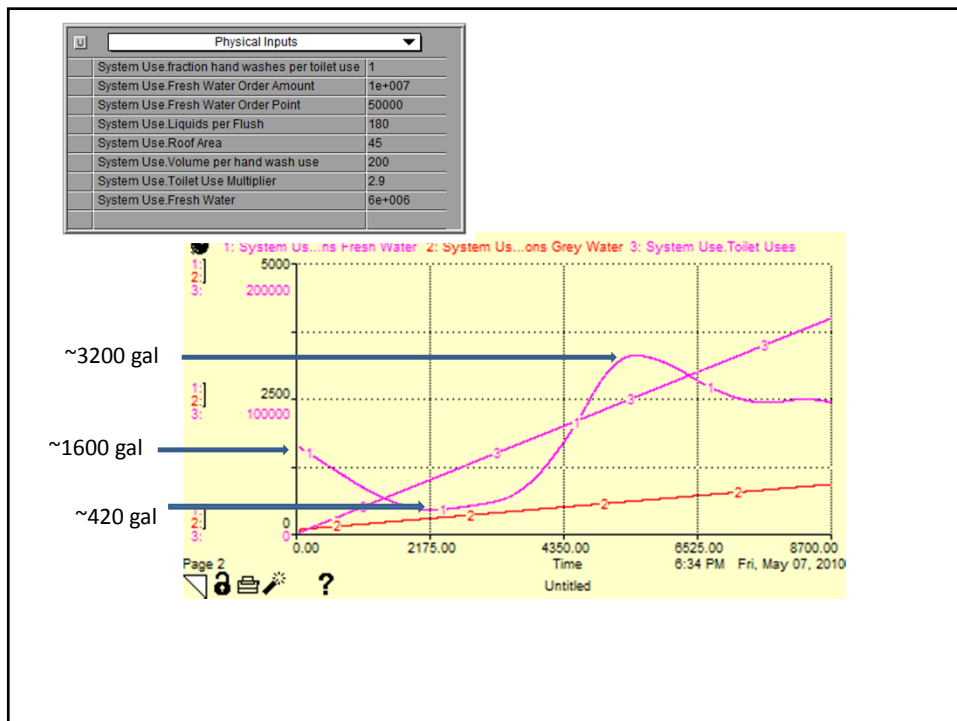
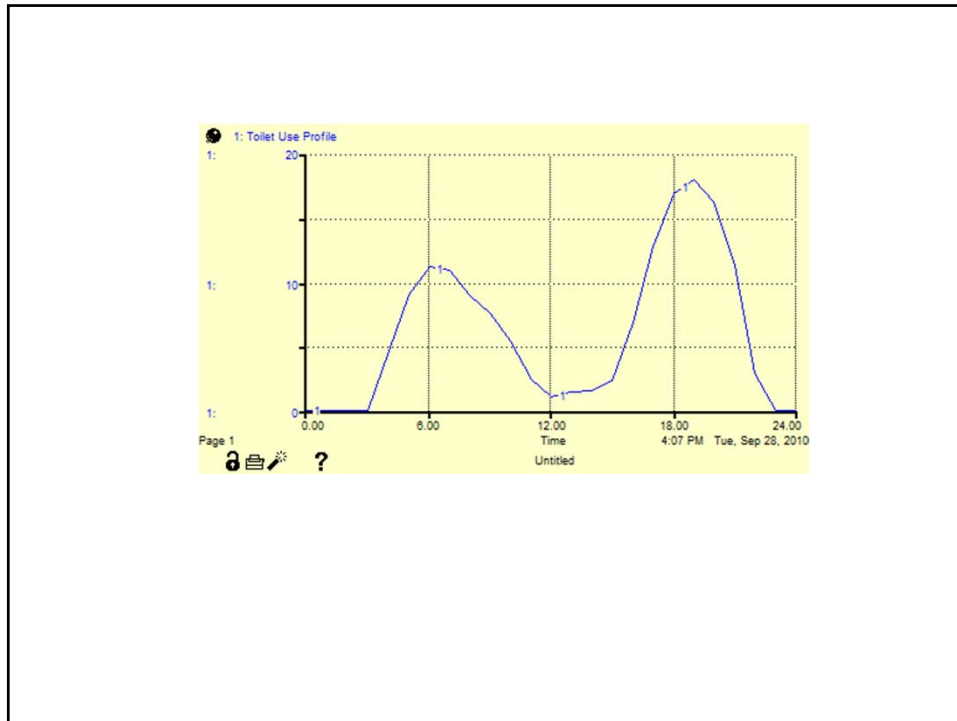
role of STELLA

- Physical elements
- Financial elements

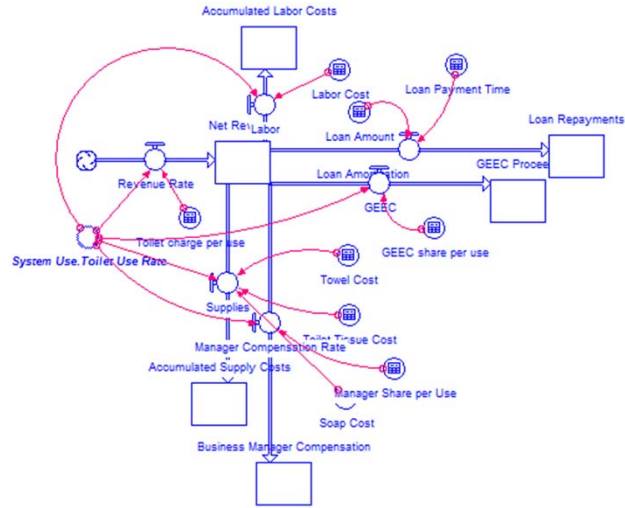


system use





financial



Financial Inputs			
Financial.Labor Cost	0.02	System Us...oilet Uses	159,481.8
Financial.Loan Amount	11300	Financial.Net Revenue	4,135.8
Financial.Loan Payment Time	5	Financial...Repayments	2,243.5
Financial.Towel Cost	0.01	Financial...EC Proceeds	7,974.1
Financial.Toilet Tissue Cost	0.006	Financial...Labor Costs	3,189.6
Financial.Soap Cost	0.004	Financial...upply Costs	3,189.6
Financial.Toilet charge per use	0.15	Financial...ompensation	3,189.6
Financial.Man... Share per Use	0.02		
Financial.GEEC share per use	0.05		

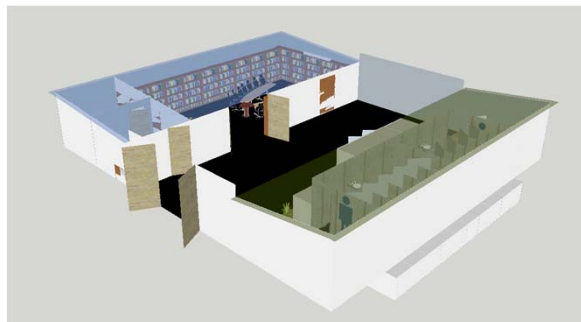
outline

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- ➔ • What lies ahead



Existing site

GSAP Center



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Thank you

Contributions for this project may be sent to:
Hannah Davis, Director
Ghana Sustainable Aid Project
352 West 12th St Apt 5D
New York, NY 10014-1720

