

Chapter 11: Design, Prototyping, and Construction

Anna Loparev
Intro HCI
02/09/2013

Prototyping

Prototyping

Prototyping

What?



http://www.flickrriver.com/photos/gingerbeard_man/4815524503/

3

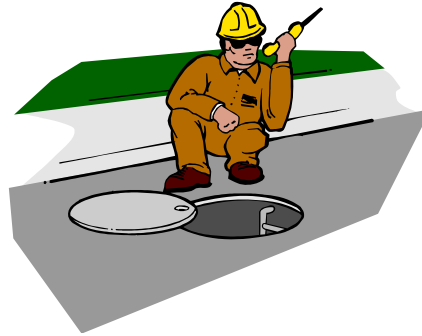
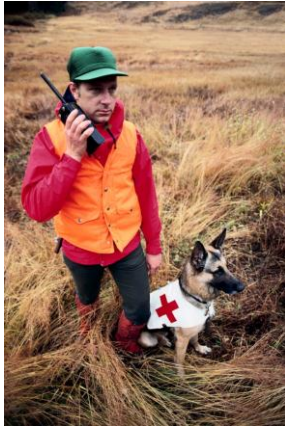
Prototyping

Why?

4

Why?

Communication device

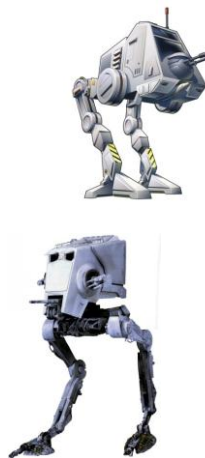


<http://www.bigshinyrobot.com/reviews/archives/25540>

5

Why?

Explore design ideas



<http://woldfitness.com/page/28/>

[http://starwars.wikia.com/wiki/All_Terrain_Tactical_Enforcer_%28cargo_transport%29,](http://starwars.wikia.com/wiki/All_Terrain_Tactical_Enforcer_%28cargo_transport%29)

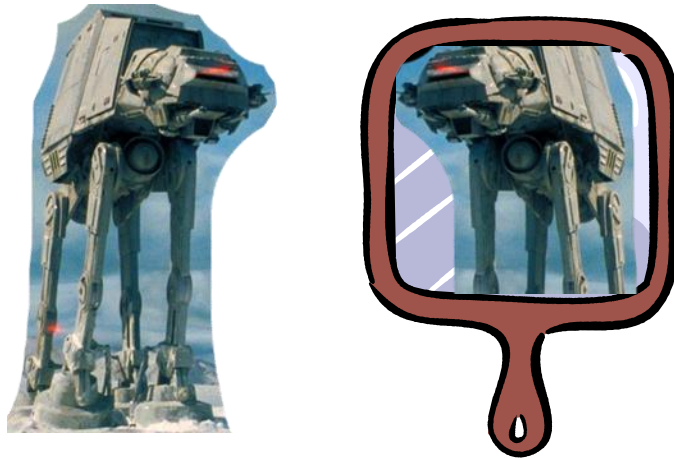
[http://starwars.wikia.com/wiki/All_Terrain_Scout_Transport,](http://starwars.wikia.com/wiki/All_Terrain_Scout_Transport)

http://starwars.wikia.com/wiki/All_Terrain_Personal_Transport

6

Why?

Design reflection

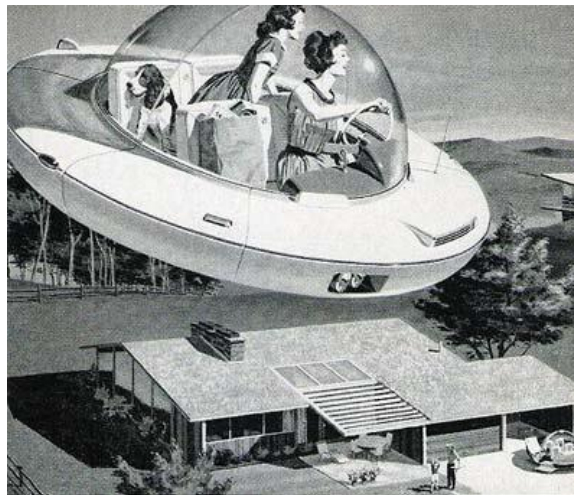


<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

7

Why?

Technical feasibility



<http://animationresources.org/?p=757/>

8

Why?

Clarify vague requirements



9

Why?

User testing and evaluation



<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

10

Prototyping

Initial Conceptual Model (Wireframe)

11

Conceptual Model

Metaphor creation

- Functional requirements
- Important tasks
- Generate metaphor
 - Users' descriptions
 - Application domain



<https://en.wikipedia.org/wiki/Mario>

12

Metaphor evaluation

- Structure
- Relevant
- Easy to represent
- Understandable
- Extensible



<https://en.wikipedia.org/wiki/Mario>

13

Interaction type

- Instructing
- Conversing
- Manipulating
- Exploring



<https://en.wikipedia.org/wiki/Mario>

14

Conceptual Model

Interface type

- Command-based
- GUI
- Multimedia
- Virtual reality
- Info visualization
- Web
- Consumer elec./a
- Mobile
- Speech
- Pen
- Touch
- Gesture
- Haptic
- Multimodal
- Shareable
- Tangible
- Mixed reality
- Wearable
- Robotic
- Brain-computer



<https://en.wikipedia.org/wiki/Mario>

15

Conceptual Model

Functions and data

- Task allocation
- Function relations
- Data implications



<https://en.wikipedia.org/wiki/Mario>

16

Conceptual Model

Plus scenario



<http://starwars.wikia.com/wiki/Stormtrooper>, <https://en.wikipedia.org/wiki/Mario>

17

Conceptual Model

Minus scenario



<http://starwars.wikia.com/wiki/Stormtrooper>, <https://en.wikipedia.org/wiki/Mario>

18

Prototyping

Compromises

19

Compromises

Breath vs. depth



<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

20

Compromises

Low fidelity vs. high fidelity



<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

21

Compromises

Evolution vs. throwaway



<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

22

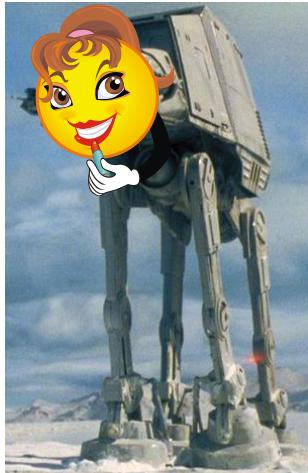
Prototyping

Things to think about

23

Things to think about

Appearance



<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

24

Things to think about

Data



<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

25

Things to think about

Functionality

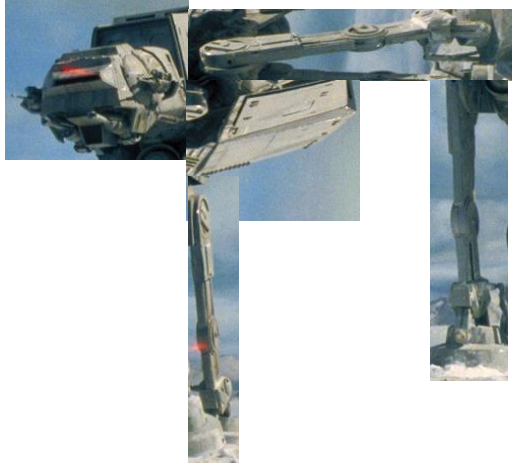


<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

26

Things to think about

Spatial structure

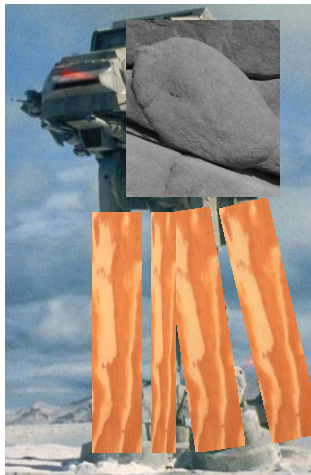


<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

27

Things to think about

Material



<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

28

Things to think about

Resolution



<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

29

Things to think about

Scope



<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

30

Types of Prototypes

Types of Prototypes: Low-fidelity prototypes

31

Low-fidelity Prototypes

Storyboarding



Take pictures of food.

<http://starwars.wikia.com/wiki/Stormtrooper>

32

Storyboarding



Automated program identifies foods.

33

Storyboarding



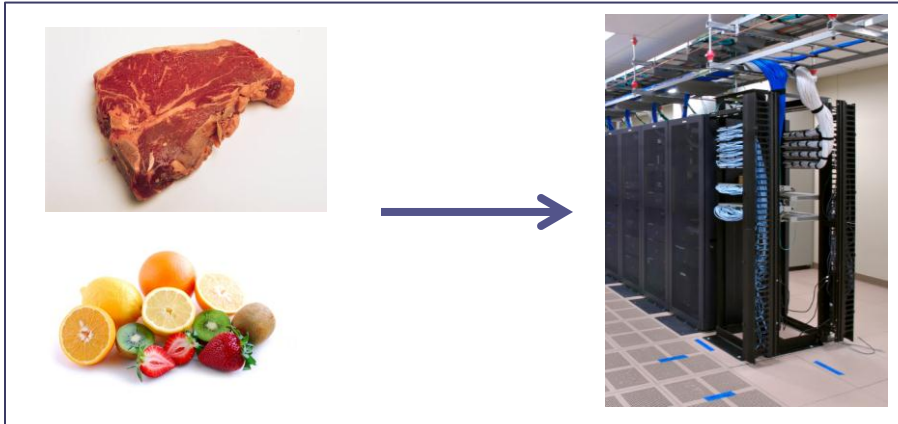
Confirm foods.

<http://starwars.wikia.com/wiki/Stormtrooper>

34

Low-fidelity Prototypes

Storyboarding

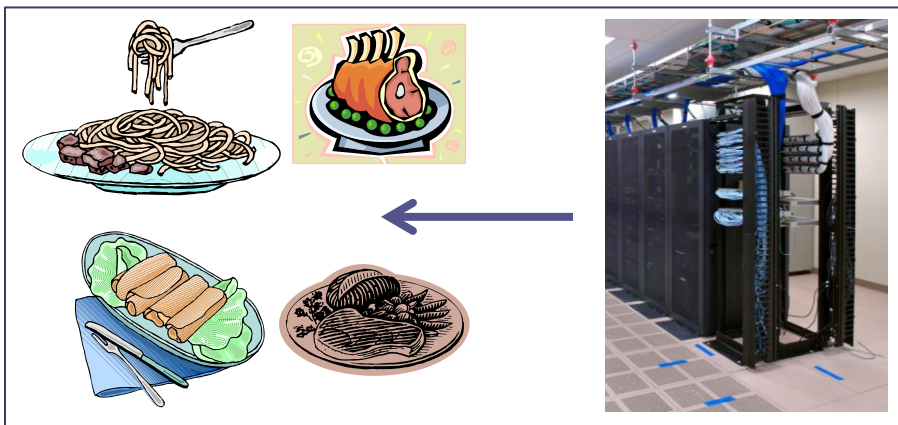


Request sent to server.

<http://stuard.com/2010/29/internet/the-server-room-data-center-is-managed-and-organized-will-be-easy-to-grow>35

Low-fidelity Prototypes

Storyboarding

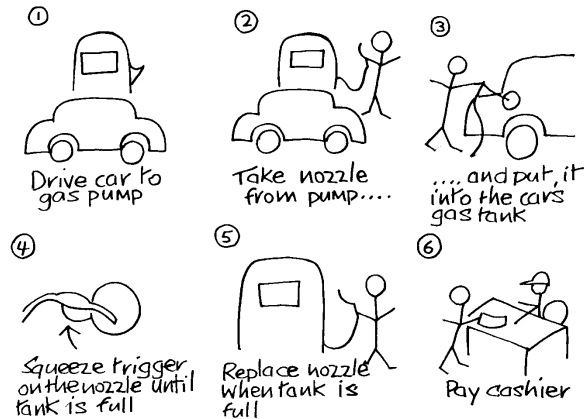


Results sent back from server.

<http://stuard.com/2010/29/internet/the-server-room-data-center-is-managed-and-organized-will-be-easy-to-grow>36

Low-fidelity Prototypes

Storyboarding: Sketching



<http://www.bigshinyrobot.com/reviews/archives/25540>

37

Low-fidelity Prototypes

Index cards

Travel Organizer 23 August

WELCOME HELEN

Where do you want to go?

What date do you want to travel?

Which form of transport do you want?

Do you need accommodation?

Travel Organizer 23 August

Train timetable from Milton Keynes Central to York on 16 Sept

Depart	09:09	10:09	same time	22:09
Arrive	12:30	13:30	next day	01:30

Accommodation Hotel B&B
 £40 to £150 £20 to £60

www.id-book.com

38

Low-fidelity Prototypes

Index cards



<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

39

Low-fidelity Prototypes

Wizard of Oz



<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.comicrelated.com/news/7037/wizard-of-oz>
<http://dailycapitalist.com/2012/07/06/no-jobs-the-result-of-wizard-of-oz-economics/>

40

Types of Prototypes

Types of Prototypes: High-fidelity prototypes

41

Types of Prototypes

Support for design

42

Design Patterns



<http://starwars.wikia.com/wiki/Stormtrooper>, <http://www.bigshinyrobot.com/reviews/archives/25540>

43

Open source software/hardware



<http://www.geek.com/articles/news/no-mozilla-did-not-just-kill-firefox-x64-for-windows-20121122/>

44

Tools and Environments



<http://validator.w3.org/>

45