Engineering Innovation and Design
Topics, Attributes, and Learning Objectives
With addition of Class Lessons and Activities

Topic	**Process skills Left brain learning**	**Intuitive skills Right brain learning**	**Character and attitudinal learning Heart and muscle**	**learning outcomes:** As a result of the subject, students will be able to:	**Class Outline**	**Class Lessons and activities**
introduction	the ecosystem of innovation: leadership, people and tools normative, descriptive and prescriptive …	the benefits of innovation, and the need for leadership creating and protecting space for right brain thinking	personal force and passion to make it happen designing with heart	Better able to describe their commitment to engineering innovation and design, the role they will play, the personal force and effort that will be necessary, and the resulting benefit to them, their team, customers and beneficiaries in society	**Intro**	**Class 1** Course Overview • Introduction to Voice Recognition Technology • Background about technology and speech recognition. • Overview of design process. Example code and. • Articulating a design Achieves #1: Extract customer requirements
understanding customer needs and setting goals weeks 1 to 3	setting program objectives identifying customers and stakeholders eliciting real needs interpreting needs and prioritizing	sensemaking on what it is that trying to accomplish active listening passive observation interaction and validation of need	feeling dissatisfaction status quo, and committing to create something better inquiry and listening personal timeless intention to help	Identify, prioritize and validate the needs of the customers and beneficiaries by empathetically listening and observing, with a personal intention to meet those needs	**Customer Needs / Eliciting Needs / Interpreting Needs, Prioritizing**	**Class 2** Review of Homework in teams. • Learning how a speech-recognizer works. • Understanding the problem: Methods to learn about Goals, Business Strategy, Customer Needs, and Understanding the user (demographics) • Understanding the concept of States (and how they apply to user interactions) • Articulating the design – how to use the user-interface specification template • Homework: create pizza-ordering flow-chart Achieves #1: Extract customer requirements Achieves #2: Critically evaluate customer requirements Achieves #6: Explain how competition is identified and assessed (morphological analysis) **Class 3** VXML 2 – the basic dialog, debugging, forms and fields **Class 4** Review of flow-chart Homework in teams. • Introduction to group-projects (present available projects) • Techniques to develop a model of a system, early stage prototyping • In class exercise: creating a "transfer funds" banking app.

						Homework: create prompts for the pizza-ordering line, refining the script. Achieves #3: Formulate customer requirements by identifying latent needs Achieves # 8: Develop a conceptual design and evaluate the design alternatives at the architecture level and detailed design level **Class 5** VXML 3 – variables, field computation, form reset Homework: Develop working VXML pizza-ordering system Achieves #4: Identify useful new technology and plan its incorporation to new products
invention and technology weeks 4 to 5	searching for technologies evaluating technology [inventing] mastering new technologies as needed	making connections to your knowledge base assessing the benefit of existing vs new technology creativity, lateral and associative thinking	knowing when to invention to need ingenuity and resourcefulness	Creatively and resourcefully identify and incorporate new technologies and create inventions in just the right quantity (and no more) so as to meet needs and lead to a successful outcome	**Supporting Tech / Tech Search**	**Class 6** • Establish groups and group projects • Introduction of market strategy, business strategy, technology strategy • Learn about the social-psychology of man-machine interactions Homework: develop preliminary understanding of group project problem and customer needs Achieves #5: Establish a bold connection between a new technology and a new product **Class 7** Pizza ordering line due. VXML 4 – Prompts (using recorded audio) **Class 8** • Choosing technology, establishing a technology strategy • Learning how to design for speed: The 1 hour banking app • Review of designs and translating ideation into planned. Achieves # 9: Explain importance of keeping flexibility and adaptability in design **Class 9** VXML 5 – writing vxml sub dialogues, barge-in Achieves #11: Explain how implementation plans would be developed Achieves #12: Discuss manufacturing timelines and schedule interactions
Concept and architecture weeks 6 to 8.5	setting goals, including cost and schedule defining concept, function and form decisions and	creating clear goals from ambiguity and constraints wow factor, taste, clarity of	Visioning elegance, beautiful embodiment decision making personal force to converge a simple	Identify and make the decisions necessary to crate the vision and plan for a new innovation or design (including its goals, concept,	**Creativity / Concept II (downselect) / Properties of good design**	**Class 10** • Techniques for creative thinking • Presentation and review of group sample call scripts • Critique of sample call scripts Achieves #16: Appreciate the need to be creative and still deliver on time (make it real in the world)

	trade offs decomposition, interface [tasking and scheduling] detailed design creating documentation	concept and its importance judgment, better vs. good enough gut check and testing limits apportioning resources limits of models	design	architecture and interfaces, detailed design, and documentation) by applying engineering knowledge, intuition and judgment		**Class 11** VXML 6 – Advanced Grammars / DTMF input **Class 12** • Branding, refining value proposition of product, TCO and ROI • The value of promoting your ideasand how to justify design decisions. • Element refinement in the design • Designing for failure, contingency analysis • Writing effective prompts: word-order, clarity, colloquialism Due: Final drafts of call flow and scripts for group project Achieves #15: Recognize the importance of the "wow" factor in products **Class 13** VXML – links, Next Document/Form/Field **Class 14** • Learning about Implementation, sourcing voice talent • Learning about Usability testing. Conducting Wizard of Oz testing, High Fidelity testing Due: User-Interface Design Spec Achieves #17: Explain limits and benefits of models in the product development process
Implementing and operating weeks 8.5 to 10	Implementation integration, test and verification delivery on time and schedule operability validation	maintaining quality ensuring safety service	responsibility to deliver with quality personal force to deliver ethics empathy with users	Implement, integrate, verify and deliver the design or innovation with quality, on schedule and budget, so that delivers value, is operable and safe	**Risk / usability / good implementation practice / integration & test (verification) / presentations**	***(Note – at this point in the class, onward, some objectives are met through the interactions between the student groups and the instructor, based on their progress, and experiences with their project)*** **Class 15** Group project work / VXML help as needed (Groups are coding projects) **Class 16** • Project management, software coding, element testing, system integration, system testing, designing for process efficiency and speed to market, exploration of software development methods • PMI Certified guest lecturer, Product Manager guest lecturer **Class 17** Group project work / VXML help as needed **Class 18**

						• Initial presentations of project • Critique of projects **Class 19** Group project work / VXML help as needed
Recap weeks 11 to 14	**adapting to change risk assessment**	**robustness, accomodatability and adaptability in design estimating and mitigating risks understanding when to be transformational, and when to just make the system better**	**willingness to be adaptable dealing with risk**	**Innovate, invent and implement designs that control risks, are robust and/or are adaptable to future changes**	**Adaptability / usability 2 / Validation / risk 2 / final presentations**	**Class 20** • Deployment, Customer Support (SLA), System Improvement, Upgrade Lifecycle **Class 21** Presentation of Initial Designs – Review and feedback **Class 22** In-class demonstration and participatory exercise in directing and coaching voice talents. Technical backgrounder Text-To-Speech and Speaker Verification technologies. **Class 23** Application Tuning - how to roll out a speech application to large groups of users: marketing considerations, speech-recognition tuning, user-interface re-design. **Class 24** • Evolution, Product family expansion, system and technology improvement. Future direction of speech-technology in cars, mobile, the web. Guest lecturer to discuss product family expansion. Achieves #20: Distinguish between what is good and what is good enough **Class 25** Final Presentations Of Group Projects **Class 26** Final Presentations Of Group Projects

ESD.051 1st Class

- (finally a small class)
- highly interactive → seminar
- project-based
- analysize
- communicate designs
- real-world constraints
- design principles → design effectively
- syllabus online
- better ways of doing things
- Joel Schindall - did 1 billion $ Sat Phone Globalstar
- Blade Kotelly 1000 engineers
- Come up with problems on your own
  - initiative
- Human Factors major at Tufts
  Then did Voice UI systems
- Blade 857 257 9595
  Blade SPW X aim
  SDM program

(2)

Pop Quiz 10%
HW 25% - just do it
Projects 55%
  Ind 25%
  Group 30%
Attendance + Participation 10%

Project

  Deliverable 20%
  Presentation 10%
  Coding 30%
  Design 40%

Work w/ other people's projects
Guest lectures
Lectures front loaded for 2 hrs

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iPhone killer

- See what iPhones does badly
- fix it
- Do everything else the iphone does as well

(3) Others

- start w/ what it does well
- talk to people
- See what needs are unmet
- new market iphone does not do well

Lecturer

Why make an iPhone killer?

Always ask why

What is the underlying assumptions

Meta thinking

- thinking about thinking

Context is important

What is it designed for?

What are you compared for

What are you designing for

What building?

1-800-555-TELL

Jingle

Have options you can say

(4)

Did not understand wrong
Voice recognizian system
They tried to do a lot of things at once
Voice check in to Foursquare
Control car
(DB train directions
or MBTA nexthus)

Not

Speech recognition
doing speech because easy to learn
Web easy to see options
People will form diff models of your system
Can do touch tone systems

10 Step Design process

Research

1. Identify needs
2. What exists
3. What is wanted

(5)

4. Planned research
5. What is safe? What can go wrong?
6. Specification: What's required?
7. Creative Design Ideation
8. Conceptual Designs
9. Prototype
10. Verification: Do people like it, do they get it?

A good requirement does not say how
Don't lead solution to seep into problem
- Limit creative designs

Book: The Art + Business of Speech Recognition

Use Angel.com
Can't publically publish #
Can only use 100 min/month

Control house heat
Its for design experience

6

HW for Mon

3 pics good design

3 bad

Upload to Stellar

HW for Wed

Call a speech recognizion system

10-15 interactions

Design Good/Bad

Good design

IRS forms ←

MSNBC.com

floorplans - Baker ← ←

baker site

~~pdfs~~ pre ←

bad design

Sidewalk lakes w/ snow ←

My alarm clock w/ keypad ←

SAP web reimbursements ←

what was I thinking earlier
don't want to be too cliche
diverse forms of design

good mix of physical + digital + non traditional
- floorplans

ESD.051 Lecture 2

Research + articulating the design

do reading: Innovation at Apple on Stellar

OnStar Developer Challenge

Called in to Tell Me
- to learn of design of other voice systems

known possible responses

Uh-huh is very hard to do

Date + time grammer
- pay attention to all possible answers
- yesterday
- 2000 + possibilities
- but can use prebuilt vocab

Clicker
- ~~Use~~ turned off when you put the reciever in

Defensive design
- will people use humor

More adaptive is better
- Harder to program
- timeframe
- know what entered before

(2)

What speech systems exist that could

- MBTA next bus
- MIT menu
- Baker desk system
- long wait doctors office
- restaurant wait times
- grandparents
  - reorder medication
- reads emails
- poor
- elderly
  - scheduling paratransit
  - UPS package tracking
  - find wifi hotspot
  - Send simple txt
  - Check in twitter
  - mixology
  - flight status
  - Campus food ordering
  - getting a cab
  - sports score

(3)

figuring out accent

translate

agenda / calendar

correct my grammer - lang teacher

voice controlled auto piolet

Order food on plane

turning lights on + off

→ Store price comparisons

next slide

MIT registrar

Vlingo

Dragon Dictate

Built in to Android

Mailing list eid-questions

Wolfram Alpha on your phone

Car games

~~Playing games~~

Local price ~~comp~~ comparison

(4)

Outband health app
- calls people to sign to them

local area events

→ farmers check market prices dev country

Network status
- for MIT

Housing search

Cooking suggestions for what ya have

Music player

Music suggester

MIT free food

Good + Bad Design examples

diff people have diff reasons

well built

form factor

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put more sheets in then possible

---

make things idiot proof

bad capacity planning

does not explain itself

(5)

Capacity planning
food
right chemicals
(he does not seem to consider constraints)
(or personal pref)
Indicator

Way to do simplicity good and bad
(seems like half constraints and half just bad)
Or too cheap
Inconsistency
Non robust ness
Wheeled back packs
Ship w/ tester
astetics
too specific
(not really talking about other stuff in cat)
(do you have to teach people to use it)

(6)

Research
Design
Production / Branding
Evaluation

Think what its like to be them

Who are they
- demographics
- how freq ← key
- atmosphere
- flight info system are in airport

When people are calling
- casual or formal
- how they speak
  - tone
  - language
- other ways to get job done

Listen to callers

HW: Read Apple article
Read book 1 + 2

- he's trashing touch tone ~~phones~~ systems
  - I don't think that bad
- should pick best system for job
- often I'm not sure its speech
- and way too positive on speech systems
- saying better than people
  - I doubt it
  - I think most people (including me now) to have a rude human
- Sands like a sales pitch

Speech systems listen for ~~the~~ key words

Smaller dict = much more accurate
esp for ~~#~~ letters and numbers
Speaker independent - no training
telephones compress voice
  - cut off s - sands
plus Cell phones tiny mics
noisy bg

(c)

When to start + stop listening

Don't cut people off

But also don't pause too long

Big drawback callers don't know the extent of the system
- what are the valid answers

~~Need to always listen for~~

Need to monitor actual conversations for paths ya have not considered.

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3. Psychology of talk

- create a reaction in the audience
  - ↳ why radio has not gone away
  - (I wouldn't agree with that really)
  - (I think he is trying to prop up his Noble Voice theory)
- One study showed people react to computer the same as a person socially
  - (really, I don't; I wonder if age thing)
- People feel good job even if computer just picking randomly

(3)

Flatter someone when they finished a big task

Reprocity - help me say your name

Choosing a voice - gender stereotypes

Use I - not we

Be like a good butler

Humor
- well placed
- makes business not seem serious
- but same joke over and over boring
- hard for homeogenious

Should use "Got it" "Ok"

(Personally - don't like
- ~~feels like a~~
- I know it is a computer
- I don't try to have a conversation
- know it won't understand

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4. Research needs

- know your customer blah blah
- Use the right lingo for the right people

THE WALL STREET JOURNAL.
WSJ.com

read 2/7

BUSINESS WORLD | JANUARY 26, 2011 recent

How Apple Foot-Dragged to Victory

Steve Jobs's formula for success: Don't Rush.

By HOLMAN W. JENKINS, JR.

Steve Jobs is taking a leave of absence from a company with great technology and a greater brand, perhaps the world's best. He's been a stellar CEO, but Apple has also enjoyed an unbelievable run that begs to be understood as more than just one man's magic.

Mr. Jobs is not a god. Mr. Jobs may be a product visionary and marketing genius, but a success as uncanny as Apple's has many fathers, one of which is luck. To wit, an unappreciated bit of Jobs luck was his relegation to the sidelines just as the tech industry was euphorically creating the Internet bubble of the 1990s.

This insight, we hasten to add, has not been suckling for years but comes to us via a headline this week about the conviction in a French court of Jean-Marie Messier for misleading investors.

Bear with us. Mr. Messier was a name to conjure with a decade ago, author of a breathtaking transformation of a French water utility into Vivendi Universal, a global media giant, including a Hollywood studio, music business, video games, a mobile phone network and a cable TV company.

Mr. Messier was a visionary (of which there were many at the time) who preached the importance of delivering media content wirelessly, regardless of platform. He believed in mobile broadband. He created his own short-lived cloud portal, Vizzavi, that would follow users everywhere, supplying high-quality video, audio and e-commerce to any kind of device.

View Full Image

Getty Images

Jean-Marie Messier, the visionary former president of Vivendi

If that sounds like he was anticipating the iPhone/iTunes revolution a decade later, he was—as were many others. In fact, Mr. Messier was placing his own little bet on top of much larger bets by Europe's telecom giants, who went off the deep end investing in 3G wireless networks in the 1990s in anticipation of the digital nirvana. What became known as Europe's $500 billion "wireless bubble" wasn't precisely replicated in the U.S., but not for a lack of urging. Larry Ellison, Steve Ballmer and other tech leaders took to podiums to fret that the U.S. was being left in Europe's mobile dust.

And where was Mr. Jobs when all this was going on?

This may turn out to be a seminal question for tech history. He had long since been kicked out of Apple in 1994, when Mr. Messier commenced his meteoric rise and fall.

Mr. Jobs was running Next Computer, making workstations for scientists. He had bought an animation studio and was learning how to make digital movies. After he returned to a crisis-plagued Apple in late 1996, he was preoccupied with cutting and bailing and creating the comparatively unambitious iMac while others were pursuing their bubble visions.

And even when Apple's own mobile strategy began to take shape, look how plodding it really was. The original iPod had no wireless connectivity. The iPhone and iPad today are still designed in anticipation of the user storing most of his media content locally.

Only now, in 2011, is Apple building a cloud farm in North Carolina, which all presume is aimed at providing the bottomless library of streaming content that Mr. Messier envisioned a decade earlier.

Let's try out a hypothesis: Mr. Jobs's slowness is the key to Apple's success. His focus on the device, his emphasis on perfecting the user experience, meant holding back, not overreaching. The iPod would only be a music player. The iPhone and iPad would be Web-browsing devices that wouldn't play most of the video on the Web. Apple TV remains "a hobby" (his words) because there's no way yet to deliver an acceptable user experience. And notice that each of these device categories had been around for five or 10 years by the time Apple entered (clobbered) them. wait till ~~good~~ perfect

Mr. Jobs has been the great withholder. If Apple were looking to encapsulate his wisdom in two words, it could do worse than "speed kills." It kills user experience by trying to deliver more than can be delivered beautifully.

Of course, this fundamental strategy orientation might now change. Apple has allowed itself to be drawn into a battle for mobile-platform market share with Google's Android. Apple's management is increasingly focused on growing an ecosystem rather than on creating devices. The Microsofting of Apple may be at hand, the company becoming a feckless and inefficient user of capital as it seeks to protect itself on every front from every perceived threat to its privileged position. Before long, Apple might even need a Steve Jobs to come back and save it again.

very focused

no previews

Articulating the design

be aware of the words it used

50 people reviewed
- design by committee

Apple article
- they are not first to market

Talking about first iMac
and think Different ad
He left floppy drive out

First to market is not always best
But apple made first music player

Learning design thinking

States and scripts

Write a script
- the main path
- ~80% will carry

Convey want app to do
There is a very specific 3 column template

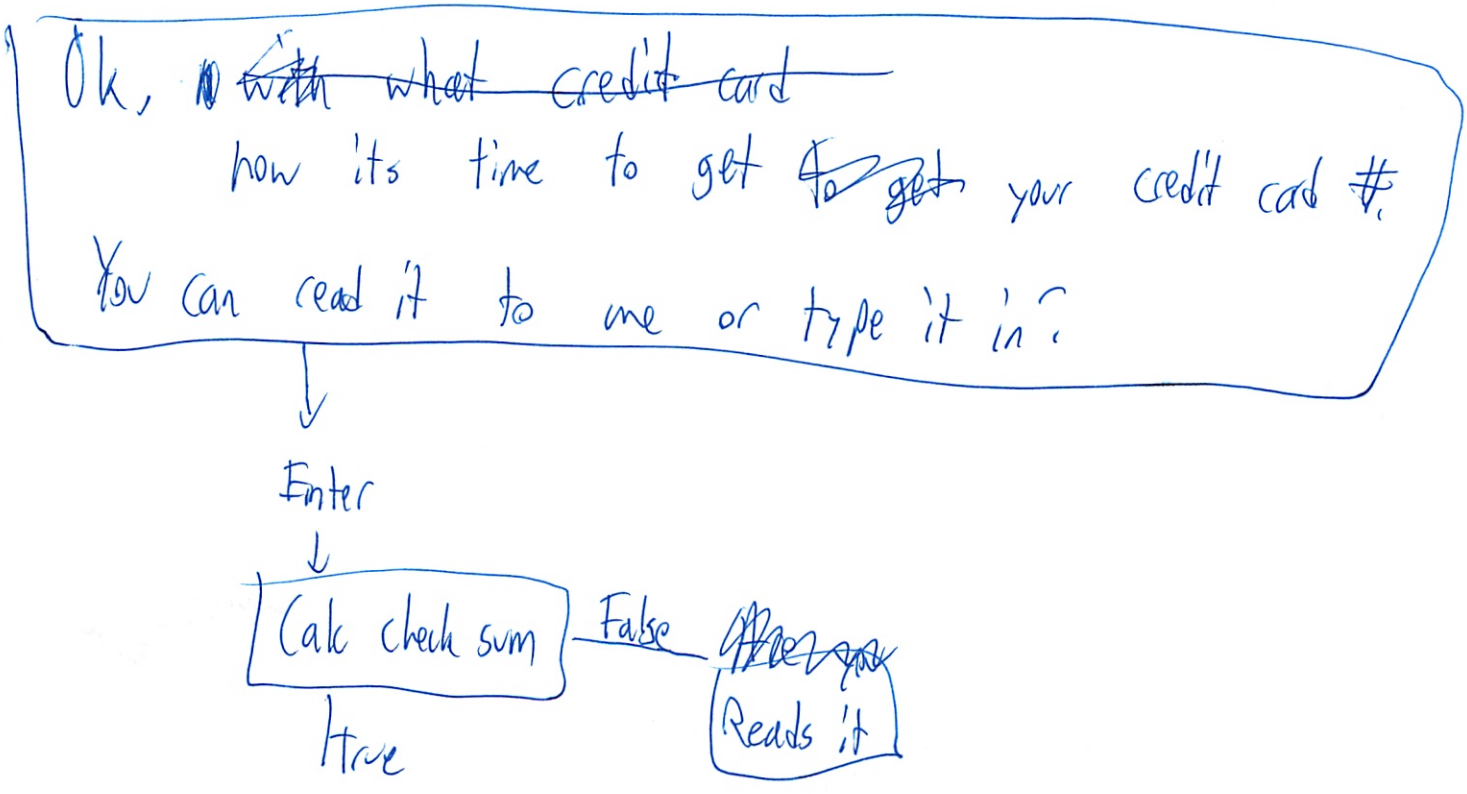
Who's Talking	Say	Notes

(2)

<touchtone>

Flow chart
- handle all answers
- state

Write script to collect CC info
- already have address
  ^billing
  + name



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know what CC ^company you have
Or show cards they accept

(3)

Script is primary path

If ya ask Can you read me ...

- people will say yes
  ~50%
- not just read it

Helped make things casual

Using "things like"

- makes it seem more ~~specific~~ broader than it is

Don't confirm things twice

When do ya confirm things?

- ~~start~~ after entry
- at end

List the numbers possible

SSN fall back

What if "I don't know"

(we did not do too much error handling)

(I think his constraints put me on the wrong place

(9)

Flow chart gets too complex fast

Transfering $ is difficult
- he asks in an interview

Trying to trasfer to same account
- need to add check
- or not include first

The one w/ $ amount
- Streamline possibilities if only 1 account

80-220 states

Numbers eaiser than letters to hear

Watch complexicities of system

ESD.051

2/14

- HW was read first 3 chap
  - ~~I read first 2 chap~~
  - I read 3

Reading

- Amporthic
- Our tech stuff, girl nature
- Praise + ask for more
- He did NYC OTB
  - had "smart" female
    - speed
    - perkiness
    - lang choice
- MapQuest by phone
  - Men don't want to ask for directions
  - All GPS start off by female
  - In the room: people said same gender
  - Pilot - female voice gets attention + easier to hear
  - But lean towards female
- Pos + neg to both voice and touch-tone

(2)

First touch-tone 1963

- were 4 more buttons
- colors
- in future - special thing w/ phone
- very rare

two tone frequency

Touch-tone issues

- limited # of options
- * = back
- # finish entering

1	2 ABC	3 DEF
4 GHI	5 JKL	6 MNO
7 PQRS	8 TUV	9 WXYZ
*	0	#

Q and Z were added recently

Now need to take away from your head

Extra clicks to dial pad

(3)

No . key for dollars + cents

$1249.28

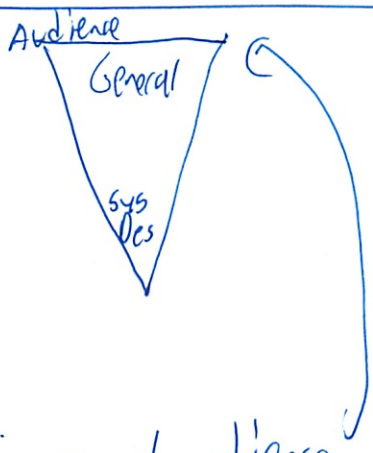
124928 ⟵ 3sec

1249**28#

will use both

- Pin #
- Credit card

Script
State diagram
State table



- to articulate design
- for different audiences - general audience
- script is fast

- Put specific things in quotes
  - for voice talent

- Script is primary
- can have secondary system

(4)

Can press 0

Then it tells you why you should not go ~~back~~ to human

< variables >

Keep it as realistic as possible

- Call someone to find

Put stuff in notes

Can now profile people

- Demographic research
- 2 systems is hard

Well whole system different

- Music
- "loser"
- casual words

Could profile

- M/F fairly accurate
- Some age
- location (area code)

- More testing

Stress detection

(5) - People would learn and fake being angry

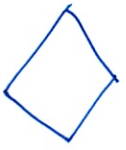
States

- clarification same state
- give more advice, info, special cases
- so same qv = same state

Use #

Clear names

Get



Multiple info

lable lines

Omnigraffle

Visio

Autodesk

Free online stuff

Scope properly w/ resources you have

(6)

# of times failing
- where transfer too

Johny Ive copy of Dieter Rams ?
- new applications

Principals

1. innovative
2. product useful
3. aesthetic
4. Understand a product
5. Unobtrusive
6. Honest
7. Durable
8. Consequent to the last detail
9. Concerned w/ the environment
10. As little design as possible

Can we strike any off the list?
People sharply disagree

Innovation is not = to invention
- follow through, implentation

Big discussion

(7)

People don't think about asetics enough
- appeal emotionally

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6 principal prompts

(1) - inital prompt
(2) - timeout
(3) - timeout 2
(4) - retry/no match
(5) - retry 2
(6) - help

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(1) Do you want for "Pickup" or "Delivery"
(4) Sorry I didn't get that. Would ya like
(2) "Pickup" or "Delivery"?
(5) Sorry I still didn't get that. Press Pickup or press 1 or "delivery" or press two. If you need help say "help"
(6) Ya can come ~~can~~ to the store to pick up your pizza

(8)

Or we could bring your pizza to you at no extra charge. Would you like pick up or delivery?

~~Says "fine"~~

Pickup would be ready in 20 minutes

initial appeal delivery would take 60 minutes

or tiresome while

(harder than expected)

Ad for GEL program

~~Apply~~ online

HW Finish + submit online Wed

Read Chap 6

2/16

ESD.051

Not trying to sell product via box
Emotional
- not analytical
Walkman - iconic orange headphones
Packaging is part of the experience
Set up instruction
First boot

Dieter Rams cont

"Environment" - is before green movement
- written in 60s

- so is it inaccordance with whats around it

Mei Good design - fits in to your life
just works
don't have to think about it

No hard and fast rule
Maintainable
Easy to manufacture

(2)

Good documented

Me: Buildable
- Open Source

Efficent

Mon HW Good design process write up

Good design helps prevent bad things from happening to the law

Prevents evil

Maintains spirit of law

Prevents you from harming yourself?

How about hacks

Is productivity the end measure
- XBox
- FB

(Very much something for my POV)
(But you can expand it for all)

(3)

Pizza hw

Which prompts hard?

- help
- first prompt
- retry 1 vs 2
- retry vs timeout

Should put touchtones in retry 1 or 2?

Why would we not understand them?

- bg noise
- person can speak over the prompt
  - if system thought heard something, prompt will stop, and then retry error
- person talking to friend
- People interrupt with yes after "Would you like pickup ...."

Do you have to define pick up or delivery

People Companies buy names + phone # from pizza cos

(1)

Is it going to cost me

Q: Do you deliver to my area?

Charge?

Time

Would like Pick up or D? (1 sec) Pickup in 20 min

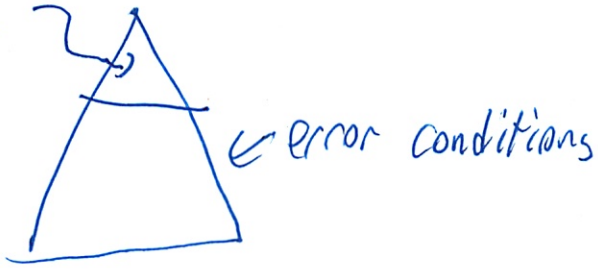
and del will take 45 min

Pause lets them bardge in

(Interesting saying both at one point)

Look for the failure condition

Typical case



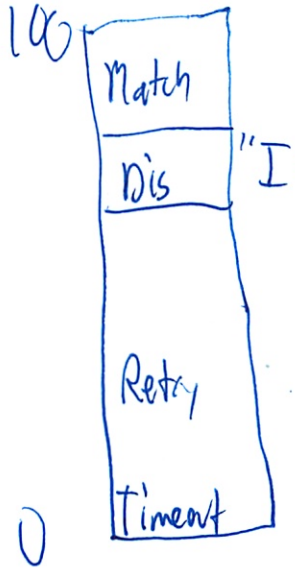
Useful when articulating a design process

Speach recognizer

Applies confidence scores

Picks highest score

(5)



"I think you said green

3 type of state tables
- Chap 5 of book

Confirm if nessarry or always
↑ before an action

Try not to use branch on condition ~~&~~ state
- bunch of info

Play prompt
- welcome

Secondary prompts
- Pre-initial
- Exit
- conditional - initial if from state ____
- other

(6)

Angel

- good for coding and no coding
- States are pages
- Computer will read if don't record
- Can even read audio files as wave files
- have a data page
- Site command – any time you say this you are redirected there

) comma means pause
Capitalize prob does not matter
Uses caller id

HW Pizza system
Twi scripts + flow diagram
along w/ principles of design process

Reading cont

Blade's Book

2/17

Research chap cont

Do a morphological analysis
- what features are implemented by certain models

Scope + structure

What does the user care about?
- that flight "delayed" or when it will arrive

Look at feasibility

risk/hazard analysis
- is it recoverable or unrecoverable
- whats the worse that can happen?

Voice authentication

Write requirements
- What system has to do
- what % of time will system work correctly
- ie how many possible accounts?
- what info the db will provide
- feel/branding
- measurable goals

Anticipate change

(2)

5 Developing the Design

- now you can start designing
- Conceptualize
  - brainstorm
    - state order
    - wording
    - branding

ie Should ask for bank ~~acct~~ acct or amt first?

will you use caller id?

Only say relevant office?

then eliminate bells + whistles that don't fit in right

maintain same style

natural flow

- context from previous part of call

will people be accessing other people's accounts?

- so don't say your

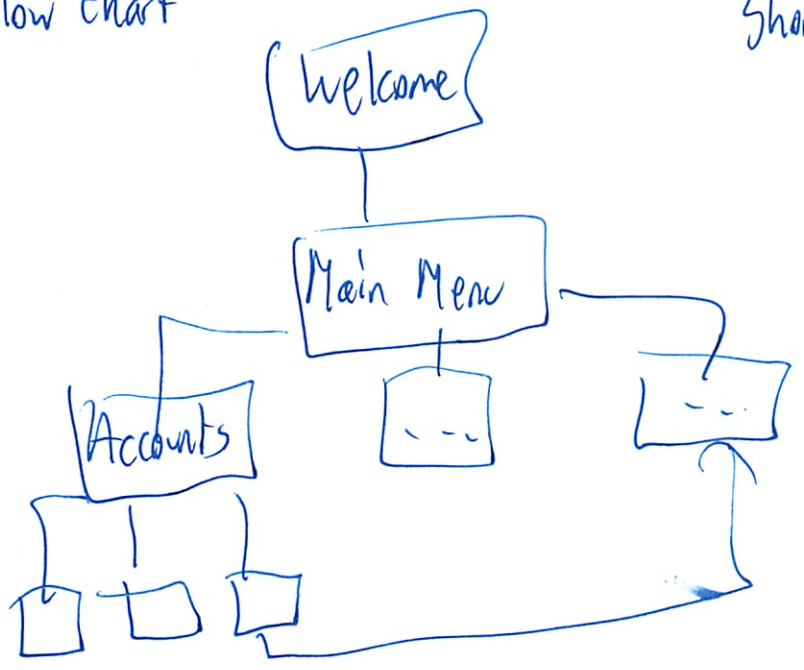
be consistant - people learn how the system works

3

Call flow

~flow chart

-



Shows big picture navigation

etc

Can do gray arrows if not finished

(I wonder how much detail to include)

Do a few times, can ya simplify?

Are all the info recieved

Vision Clip / Sample call

↑ produced to show how system might work

Sample call - actual exchange

Can do secondary clips to handle errors

↑ show how

(4)

Play simplist one first
Just a draft

Design Specs

- Overview
- contents
- examples
- details
- - states

(went over in class)

Notes like this prompt can't be interrupted

Or special retry

What the possible inputs are

Touchtone fallback - legal requirement

& Writing Prompts

- haiku - elegant, intuitive, short
- lots of error correction

- initial
- retry
- timeout
- help
- sucess
- failure

(5)

Try not to have an ∞ list of answers

Say possible answers
- but not every time

Consistent commands

No more than 2 retrys

Option for operator

Try for no ambiguity
"half a year" instead of "6 months"

Try not to have too much info
- except if legal requirements
- then try to shorten

Focus on essentials

Get to the point

Put important info up front

Good grammer makes things easier to understand
(shocking)

But not always

"Want" not "wish"

"Say" not "speak"

(6)

Use contridictions
- human sense

Word order matters
- have command at end
(I thought I remember him saying it was other way)

Watch just
- 13 different possible meanings

Want, can, like, may
slightly different
Can - sounds very eager
may - too formal?
Want - neutral
would - slightly more formal

Natural lang shortcuts
- much faster if caller knows options
- hard to recognize
- when to train users?
- ? if they call back frequently
- afterwards here's a hint ....
- use the info they just entered as an example

(2)

Start with stating intro
Target to user's knowledge of system
Consistant structure
ie <Verb> the <Noun>

But
- don't focus on details before structure
- not overly verbose
- timeout + retry should be add. info

---

7 Production + Branding

lots of ~~pre~~ environments available
↑ tool kits

front-end and ~~date~~ back-end
quality assurance testing - up to spec
Usability testing - getting real users

2 ways to make prompts

TTS - text to speach
- formant - ~~combine~~ synthize sound
- Concatenative - stich together pieces

Concatenative sound better but require more memory, disk space, etc

Using voice talent can add emphasis

- Casting
- directing
- concatenative recording

Casting

- matches brand
- solicitate demo tapes
- ask them to read a short script
- audition for 20 min
  - read prompts w/ diff tones
  - reading a list
  - easy to work with
- Union more expensive but more professional usually

Directing

- making sure tone is hit
- tell them what environment to imagine
- different directing may make prompts not match when more re-recorded later

(9)

Recorder in order of call
- so start w/ welcome

- Pronunciation
- Articulation
- Intonation
- Expression
- Emotion

What are the options - so know where to emphize

Make sure matches region of where callers are from
- or service won't feel local

Connected speech is natural

May need to record words twice w/ different emphsis
- the context is important
- so concatanated speech is not choppy
- rising, medial, falling

~200 prompts/hr
$ 100-400 non union/hr
$ 1,300/hr union (how!)
+ studio + casting cost
record in high quality

(10) If missing 1-2 prompts can just record at home + email

Audio icons

Short sound clips

So know talking to computer

and makes system feel professional

Indicates system has changed

feel + branding

anchors - like for main menu

too many bad

- annoying

Compression really hammers sounds

- listen on the phone

Branding

- its an important part of your brand, so don't have a shitty system
- provides anonimity for sensitive transactions
- Personality
  - is it like the ad
  - or the best cust care person?
- Does not have to be the same as ad/spokesman

8 Usability Testing

Actually try the stuff out!

Make something people want to use

Don't wait for your users to tell you something does not work

its not QA - checking if up to spec

Check to make sure people have right mental ~~model~~ model

Can people build a mental model of the system?

Get real people

Give them a scenario/task to do

Look for body language

- since they can't say what they are thinking

Can give them a pre-test to find out what type of user they are

3-5 tasks/person

Common tasks

don't test stuff in too much detail

log w/ video + tick sheet

post test questionaire

(12)

Test w/ good representives of cust
- regional issues
- way of working

Employees cheap
- but may want their lingo.

Can get from client

Or select from the demographic

Can use a recruiter
- but $

Need to pay compensation for time

Try to test in the environment

Wizard of Oz - person pretends to be a computer

Classic usability - one way mirror room
- need to build first
- but will show errors you have not anticipated

After done decide severity of problem and if you are going to fix it
Really understand why it went wrong

(13)

Deployment

deploy slowly
monitor real-world calls

if deploy all at once - things can go wrong
- that were not anticipated

Pilot
Few hundred calls
listen to each one

10,000

Full
- capacity issues

Listen for
accuracy of recognition
transaction completion } seperate
(Interesting to think of seperatly)

Phone Sampling
- random
- by area code
- sending some a letter with a new #

(14)

Put in a short test message

Be prepared to stop the test

Only test during biz hrs so can closly monitor

Automatic analytics sw

know what is a sucess

- may hang up after getting info, even though not a booking

Failure - may do things and right, but say wrong thing

Unknowns

- if don't know
- larger percentage than you think

Going to an operator is Ok

- if don't know why
- they know the system does not handle that

Monitor continuously

- when airline added new stop, system must change

< 5% failures deploy

> 20% " shut down

> 33% ← unknowns = need more info

Complex deployments may need to be rolled out slowly

~~Part~~

(15)

Partial deployments

-about scalability + hardware

Can shorten prompts and save millions on long-distance fees

Full

Take a look if sucess drops

Has the bank rebranded their account names?

Part 3 Applied Knowledge

United: short if know flight #

or long if don't - more detail

Use context

Diff companies/designers make diff decisions

He says go through pref list and allow people to say yes/no

Introduce legal statement

- if can't rewrite to be simpler

List management techniques.

ESD.051 Pizza Ordering Homework Parts 1+2

Notes:

- Scripts & Call Flow Diagram due **Tuesday, February 22, 2011** (should take 1 hour).
- We will review your designs in class – PLEASE bring printed scripts and call- flow diagram to class.
- See Chapters 4 and 5 in the book as a reference to using state tables and constructing call-flow diagrams.

The Problem:

You are tasked with designing a pizza ordering system for a small, independent pizza parlor that will take orders with a voice application. At minimum, a customer should be able to:

1. Choose a size (small, medium, or large).
2. Choose one topping (pepperoni, sausage, mushrooms, olives, onions, or green peppers).
3. Decide if the order is for pickup or for delivery.
4. If the customer asks for delivery, record their address. In Angel, you will record to an audio file using a Voicemail page.
   Play back the order, namely the size, toppings, and whether the customer asked for pickup or delivery.
5. Save the entire order, including the recording of the delivery address if applicable, to a spreadsheet. An employee at the pizza parlor will then be able see all the orders that need to be filled. In Angel, you will implement this with a Data page. Additionally, you should include one retry prompt and one timeout prompt for each question.

Part I - Script

For the first part of this assignment, you should write scripts that demonstrate the complete experience you plan to build. For example, you may want to write two scripts: one where a customer orders a pizza for pickup, and second where a customer orders a pizza for delivery.

Note that requirement #6 (saving the order) will not change the design of your script, as it is not part of the customer-facing experience. Please follow the three column format shown in class, namely: Who is speaking, What they say, and Notes.

In this first part, you are just writing the scripts. Later you will be designing a state diagram, and then implementing the system on Angel.com.

Part 2 - Call Flow Diagram

For the first part of this assignment, you should write create a call-flow diagram that reflects the design of your script. You can use Microsoft Visio (Windows), Omnigraffle (Mac, and available at the 26-139 Athena cluster), or you can use a free online tool such ashttp://draw.labs.autodesk.com/ADDraw/draw.html - or another one of your choosing.

In this second part, you are just creating the call-flow diagram. Later you will be implementing the system on Angel.com.

Additional Challenges – if you want:

If you would like to make a more complete pizza ordering system, consider adding these features:

- Allow customers to choose multiple toppings.
- Allow customers to confirm the order, rather than just reading it back to the them. If part of the order is wrong, return to the very beginning of the ordering process.
- Anything else you'd like. But be careful; some ideas may be very difficult to design and implement. Others may be impossible due to the limitations of the technology. If you have questions about the feasibility of an idea, feel free to ask the staff!

ESD.051

2/22

PopQuiz 1

~~Van Halen~~

Car has top speed on dashboard go too high
So you think it goes faster
No clock
What your goal is
- just to drive
- or to go somewhere

Honest design?

Principles of design process

- To spec
- To cost
- Blade: to the spirit of the spec
- As simple as possible
- Well crafted, attention to detail
- ~~Blade~~ Well don't want to worry too much
- Design for manufacture in mind
- As many possible uses considered
- Thorough

(2)

Misuse

Safety

- end use
- manufacturing
  - poor lighting
  - bad instructions
  - fatigue
  - poor tooling

Minimize waste

- time
- resources
- money
- Don't waste time coding - write a script

Timeframe well planned

~~Figure at~~

Uses data + research

Revise in 2 weeks

Sometimes don't think about it a while

Psychology

People are polite to computer's face

when talk to other computer they are more honest

(3)

Can use it to establish a close relationship

- Teamwork
- "I'd like to help you, but the system administrator forbid me from"
- Reciprocity
  "Teach me how to say these words and I'll recognize you better"
  People think the system works better even if it doesn't
- Expert opinion
  - how little you need to influence this
  - just put a labled word on TV influenced things
- identity
- if like service, cuts churn
- understand, learn, enjoy
- text, voice talent, directing

Ok when voice recorded
not when TTS

Males like male voices
Females "female"

People do very good research, but draw bad conclusions

ESD.051

2/23

CIO AT+T get email about a hack
(I am bad at explaining stuff simply)

So communications plan
- unconfirmed reports
- investigating
- will do full investigation
- work w/ law enforcement to find those responsible

Then look further into hack details
Not say much publically unless media figures things at
Post on twitter, phone line, website
Why was stuff not fixed from 2003 hack?
- would check w/ web team
- ~~[redacted]~~
- and previous CIO

Others: Take website offline
On call w/ Apple
List each person at meeting and how to make each feel better
Should have known about it
Contact peoples whose phone # released

(2)

What do you tell Steve Job's lawyers??

Turn off DB / system?

~~[illegible]~~ → which system

You don't know if they are deep in system and still pulling down data

Attach sicknob grap?

Disconnect SJ's phone?

"limit damage"

Contact sources in article?

See if more info is lost

Use 10-step design process

Underlying problem: people lost their privacy

Check if what they said was true

Problems Legal + PR + Stock + Relationship w/ Apple

Don't overreact

Say team who will work on it

- Shifts
- How many resources

(3)

What actually happened

T-Mobile

Paris Hilton

Mobilized all these people

- day + night

People guessed her password since it was her dog

Challenge basic assumptions

Make sure have info before taking action

Pizza HW

- long
- Lets start off with a size
- Ya can choose one pizza
- If you are done customizing your pizza say done
- Customize your pizza
- Seperate checkout
- Drew's was short - extra stuff in retry
- Said pickup order

(4)

- People know toppings and size
- Wrong zip code
- No option for ~~store~~ plain
- Delivery time and cost
- Allows user to say yes or no
  - don't have to say "yes" or "no"

⇒ New order, order status, or other

How can I help ya, you can say, ...

- More of a higher level flow diagram

~~The~~

- Promotions
- Confirm the order has been placed
- Name for pickup
- Special delivery instructions
- Last time you ordered caller id
- Just recording info did not confirm zip code is in db
- Can throw extra stuff in dict
  - and then say we don't have it

(5)

Ask how many topings

~~But~~ computer

- But people may not count before hand

Designing by committee ~~made~~ makes stuff more complex

Mike's Pizza

Order a new Pizza for Pick Up

new order, order status, or other

System	Welcome to Mike's Pizza. For a new order, say "new;" to check the status of an order, say "status;" for anything else, say "other"	Other sends caller to a human
Caller	New	
System	Great! Our fantastic pizzas are available in "small," "medium," and "large." (Pause 1 sec) What would you like?	This system only allows a customer to order 1 pizza with one topping; no multiple toppings; no split toppings, no drinks, sides, etc Prices provided in retry, timeout, help
Caller	<Medium>	
System	Would you like it "plain" or with "pepperoni", "sausage", "mushrooms," "olives," "onions", or "green peppers?" don't include	Can only have one topping Prices provided in retry, timeout, help
Caller	<Plain>	
System	I head a <Medium> <Plain> pizza. Is that correct? You can say "Yes" or "No"?	Prompt cannot be skipped Confirm pizza here
Caller	Yes	
System	Great! "Pickup" or "delivery"? **(Pause 1 sec)** Pickup in <20> minutes or wait <60> minutes for delivery.	Use actual wait times Emphasize wait time to encourage pick-up
Caller	Pickup	
System	Ok. Your order comes to <$10>. Can I place your order?	
Caller	Yes	
System	Great! Your order has been placed. We will see you in <20> minutes at 200 Main Street in Cambridge. Thanks for calling!	

Plaz

Order a new Pizza for Delivery

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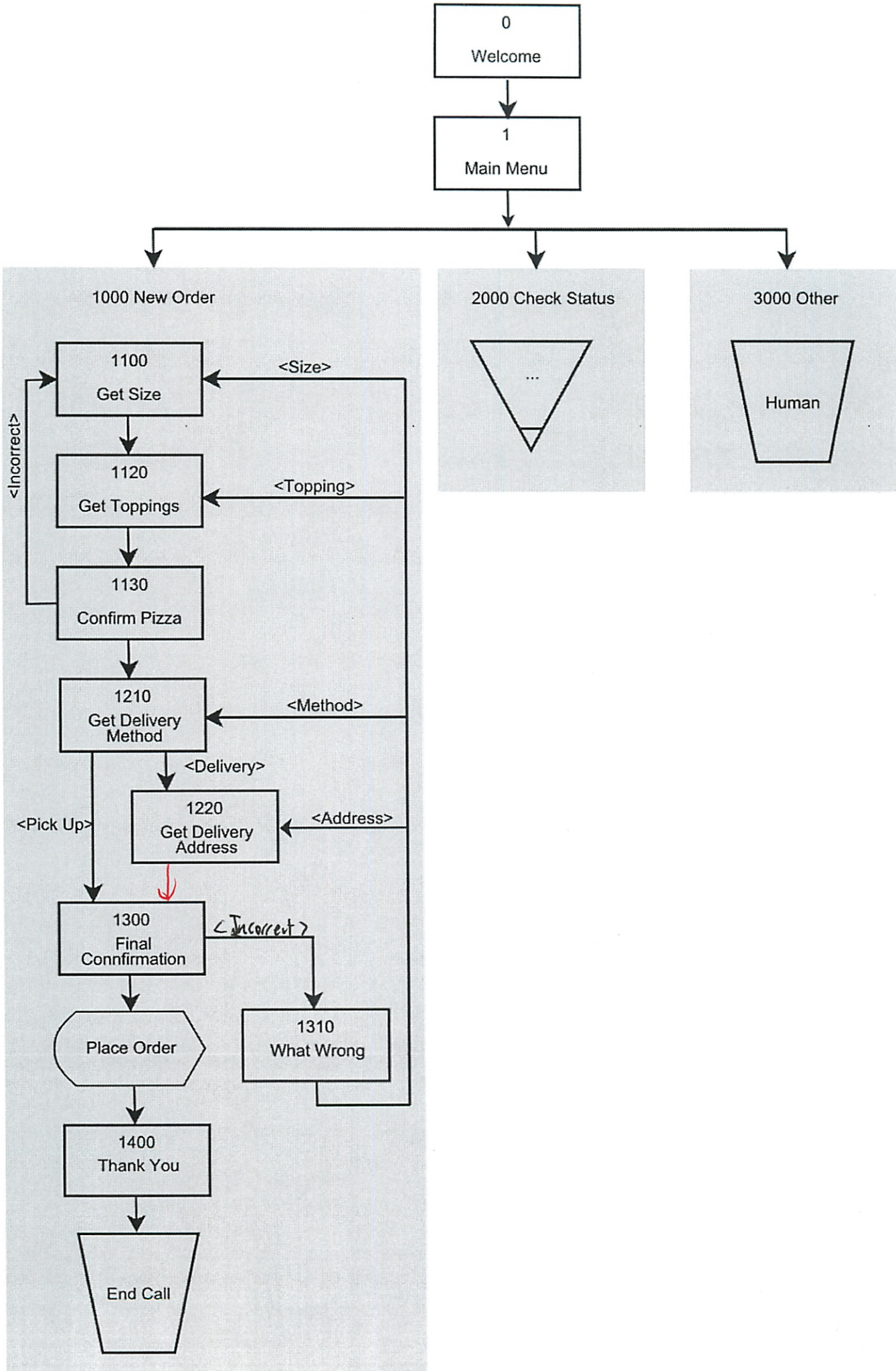
Caller	Delivery	
System	Ok. Where would you like your pizza delivered to? Please speak your name, address, telephone number, and any additional instructions and then press pound.	Will be recorded to an audio file
Caller	<Michael Plasmeier. 362 Memorial Drive. Cambridge, Massachusetts. Please call me when you are here. 617 225 7262> **[#]**	
System	Your order comes to <$10>. Our delivery drivers accept cash only. Your delivery information is **(play recorded delivery info)**. Can I place your order?	Split confirmation
Caller	Yes	
System	Great! Your order has been placed. Fresh Mike's pizza will be at your door in about <60> minutes. Call us back to get status information. Thanks for calling!	

Add error/timeout cases

Plaz


0
Welcome
1
Main Menu
1000 New Order
2000 Check Status
3000 Other
...
Human
1100
Get Size
<Size>
<Incorrect>
1120
Get Toppings
<Topping>
1130
Confirm Pizza
1210
Get Delivery Method
<Method>
<Delivery>
<Pick Up>
1220
Get Delivery Address
<Address>
1300
Final Connfirmation
<Incorrect>
Place Order
1310
What Wrong
1400
Thank You
End Call

ESD.051

2/28

PW: angel123

Assignment now due Fri

Oh I did not put in person's name for pickup or saving caller id

---

Group work

- Overhead getting people up to speed
- do want simple or more robust

What is efficiency?

- Work done per time
- but what about quality?

$$\frac{Q_{\text{equality}} \cdot W}{A} = E$$

Get it all done + then review

All on board we were very disjointed

Then we fixed our personal scripts/flows w/ what we learned

Group work: when to stand up and when you go with the flow

(2)

Everyone drafting might not be best use of time
Merging is expensive always
Justify time spent putting stuff together
So give each person a part
So ~~prototype~~ argue over the prototype - not the final code
Get a vision together
Then each person working on their own
If have good specs
And then a good plan for each person
If >4, then need some Hiraracky
Leader does the coordination
- may do more of it than execution
If no leader, group won't do as well
Listen to people's complaints
6 hats of UPOP
- and what order to put them in
Under time pressure
- do you want to start over
Get at of the box - look at the meta level

(3)

Learned what other people did

designs got
- more thorough
- more robust
- more complicated

End help prompt with so.... Then play initial prompt again

Wed - ideas for ind project, reading
Fri - angled implementation
Mon - ind. scope + script
Wed - project plan
Mon - intermediate project presentation, chap 4-6 reading
Sp. Break
Mon - First usability test, chap 7-8

Bladesi Presentation rule: Don't bore him.

(11)

Usibility

WP: designd to psychology + physiology

Blue: Can use?
Can form mental model?
Enjoy it

Wot: Use acceptance testing (will be on quiz)

About people, not spec

1. Self review
2. Expert review
3. Low fidelity prototyping
4. High fidelity prototyping

3 things to keep in mind
1. Intended behavior
2. Observed behavior
3. Rationalization

Take notes quickly
Category

(5)

Then - UI Severity 1-5
- Tech Complexity 1-5

Need to make user feel comfortable
- its not them that failed
Don't lead the witness
- don't give too much info
Get away from subject if you can
Often must throw out one person
Watch out for stats

Assignment

Pre-Test

- How often do you use a stapler?
- What is your occupation?
- ~~Where do~~
- Did you purchase the stapler you use most often?

(6)

Post-Test Were there any problems with the stapler

Was this stapler easier or harder to use than your current stapler, when stapling paper

On a scale of 1-5 was this stapler easy to use to staple paper? 5 being very easy and 1 being very hard

Same 2 for reloading

Would you purchase?

How much would you pay?

Refine qv w/ providing options
So can normalize

Right or left question
-or is that useless

Wdd - no good - watch what hand they used

What are issues you had w/ staplers in the past

Say list 2 problems so people write it down

Age

(7)

Rate fine motor skills 1-5
- Bad, self perception
- observe instead
Draw a perfect circle instead

Where use
- put options

Willingness to Pay
- bit too abstract

Describe stapler you use
Better - check off under 5 pictures

~~Do hand grip test?~~

Should you do both tasks in one?

Have a bunch of fastner options?
- what it don't pick
- ~~re~~make Stapler more snappy

Turning in questionaire is part of the test

(Test)

Test the test

See what trying to accomplish with the test

See how people use stapler
- on a desk
- in hand

Test could be 50 times to really get used to it

Then do post test

List out the options

Very easy

Somewhat easy

neither easy nor hard

Ask to explain what you did

Then ask for clarification

Feedbak

- Color metal to show which staplers w/ the staples

Don't let people suffer too much

Put don't do too much

- Least thing to get over hurdle

We accidently tested diff size of staplers

Excel

- Ren

...

Remember what it is called - transpose

Mike's Pizza

A Voice Ordering System by Michael Plasmeier

Contents

Plaz

Scripts

Order a new Pizza for Pick Up

System	Welcome to Mike's Pizza. You can say "new order", "check status" or "other"	Other sends caller to a human
Caller	New order	
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Plaz

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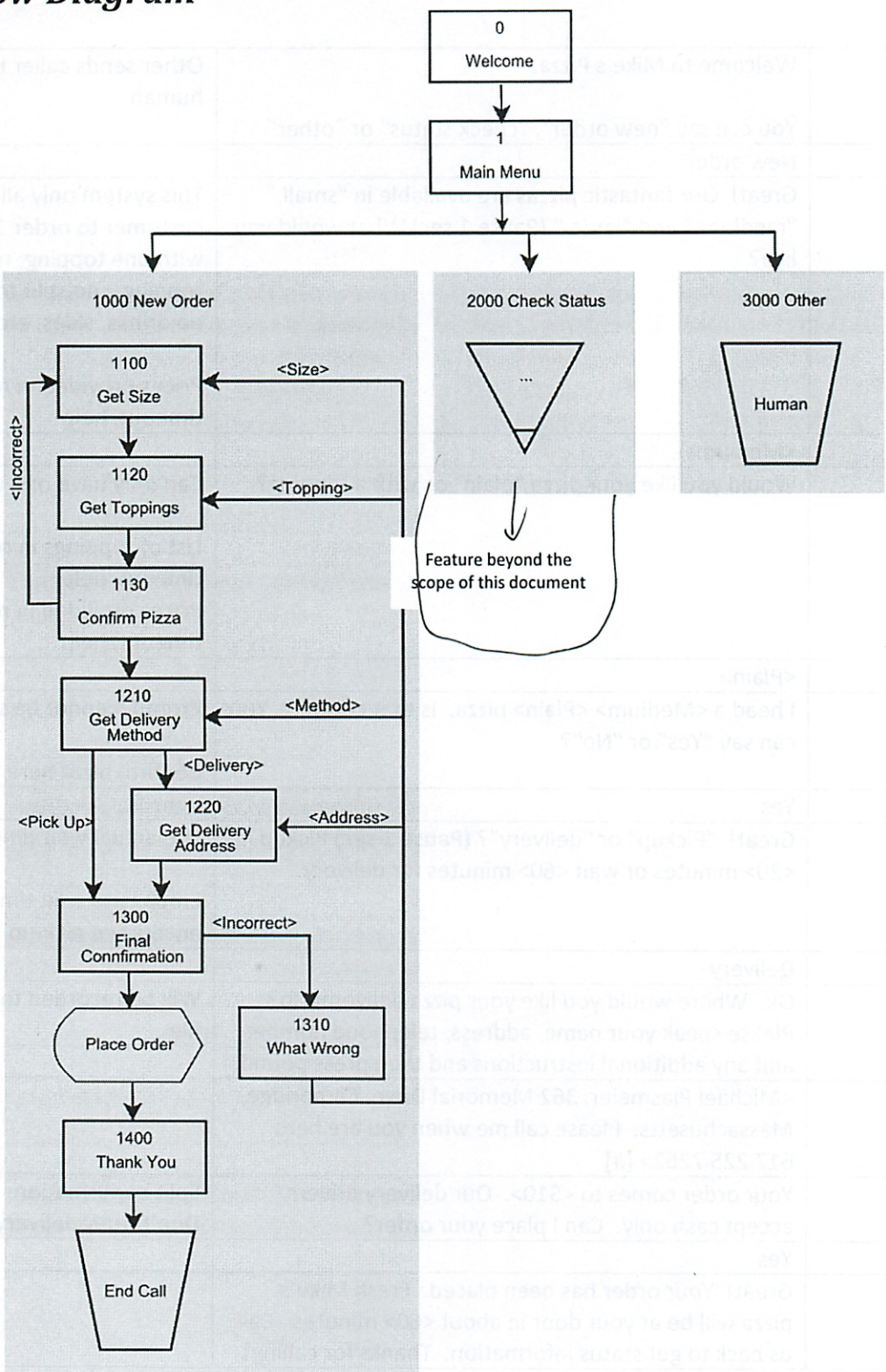
Caller	Delivery	
System	Ok. Where would you like your pizza delivered to? Please speak your name, address, telephone number, and any additional instructions and then press pound.	Will be recorded to an audio file
Caller	<Michael Plasmeier. 362 Memorial Drive. Cambridge, Massachusetts. Please call me when you are here. 617 225 7262> **[#]**	
System	Your order comes to <$10>. Our delivery drivers accept cash only. Can I place your order?	Split confirmation Don't reply delivery info
Caller	Yes	
System	Great! Your order has been placed. Fresh Mike's pizza will be at your door in about <60> minutes. Call us back to get status information. Thanks for calling!	

Plaz

Flow Diagram



Plaz

State Tables

0 Welcome

Play Prompt		
Entering from		
<User Calls In>		
Prompts		
Name	***Condition***	***Wording***
Welcome	*Always*	Welcome to Mike's Pizza
Condition	***Action***	
Always	1	
Module Settings / Notes		

1 Main Menu

Speech Input				
Entering from				
0				
Prompts				
Type	***Wording***			
Initial	You can say "new order", "check status," or "other."			
Timeout 1	Sorry, I didn't hear you. You can say "new order", "check status," or "other."			
Timeout 2	Sorry, I still did not hear you. To place a new order, press 1. To check the status of an existing order, press 2. Or for all other options press 3 to talk to an employee.			
Retry 1	Sorry, I didn't get that. You can say "new order", "check status," or "other."			
Retry 2	Sorry, I still did not get that. To place a new order, press 1. To check the status of an existing order, press 2. Or for all other options press 3 to talk to an employee.			
Help	You can start a new order, check the status of an existing order, or talk to a human who can handle all other questions			
Option	***Vocabulary***	***DTMF***	***Action***	***Confirm.***
New order	New Order New Place Order	1	1000	*If necessary*
Check status	Check Status Status	2	2000	*If necessary*
Other	Other Human Talk	3	Send to Pizza Shop Human Representative	*If necessary*
Other Module Settings / Notes				

Plaz

1000 New Order

Play Prompt
Entering from
1

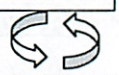
Prompts

Name	*Condition*	*Wording*
Welcome	*Always*	Great!

Condition	*Action*
Always	<go to 1100>

Module Settings / Notes
This welcomes the user to the new order subsystem.

1100 Get Size



Speech Input
Entering from
1100 *Abnormal:* 1130, 1310

Prompts

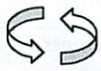
Type	*Wording*
Initial	Our fantastic pizzas are available in "small," "medium," and "large." **(Pause 1 sec)** What would you like?
Initial from Abnormal Entry	What size would you like? "Small", "medium", or "large"?
Timeout 1	Sorry, I didn't hear you. What size would you like? "Small", "medium", or "large"? **(Pause 1 sec)** Small pizzas are 7 dollars; medium pizzas 10 dollars; and large pizzas 12 dollars.
Timeout 2	Sorry, I still did not hear you. To order a small 8 inch pizza for 7 dollars, press 1. To order a medium 10 inch pizza for 10 dollars, press 2. To order a large 12 inch pizza for 12 dollars, press 3.
Retry 1	Sorry, I didn't get that. What size would you like? "Small", "medium", or "large"? **(Pause 1 sec)** Small pizzas are 7 dollars; medium pizzas 10 dollars; and large pizzas 12 dollars.
Retry 2	Sorry, I still did not get that. To order a small 8 inch pizza for 7 dollars, press 1. To order a medium 10 inch pizza for 10 dollars, press 2. To order a large 12 inch pizza for 12 dollars, press 3.
Help	We sell pizzas in 3 sizes. Small pizzas are 8 inches and cost 7 dollars. Medium pizzas are 10 inches and cost 10 dollars. Large pizzas are 12 inches and cost 12 dollars.

Option	*Vocabulary*	*DTMF*	*Action*	*Confirm.*
Small	Small Seven dollars Eight inches	1	Record state. Go to 1120	*If necessary*
Medium	Medium Ten dollars Ten inches	2	Record state. Go to 1120	*If necessary*
Large	Large Twelve dollars Twelve inches	3	Record state. Go to 1120	*If necessary*
Personal	Personal Extra Small		*I'm sorry we don't carry personal pizzas. The smallest we have is 8 inches. To order an 8 inch pizza, say "small"*	
Extra large	Extra Large X L		*I'm sorry we don't carry extra-large pizzas. Our large is 12 inches; larger than some pizzeria's extra-large! To order a 12 inch pizza say "large"*	

Plaz

Other Module Settings / Notes

1120 Get Topping



Speech Input

Entering from
1110 *Abnormal:* 1130, 1310

Prompts	
Type	***Wording***
Initial	Would you like your pizza "plain" or with a topping?
Initial from Abnormal Entry	You can say "plain" or the name of a topping we carry.
Timeout 1	You can say "plain" or the name of a topping we carry: "pepperoni", "sausage", "mushrooms," "olives," "onions", or "green peppers" **(Pause 1 sec)** We like to keep it simple, so we only put up to one topping on each pizza. Toppings cost an extra dollar.
Timeout 2	Sorry, I still did not hear you. For a plain pizza, press 1. For pepperoni, press 2. Sausage, 3. Mushrooms, 4. Olives, 5. Onions, 6. Green peppers, 7. We only put one topping on each pizza. Toppings cost 1 dollar extra.
Retry 1	Sorry, I didn't get that. We only put one topping on each pizza. You can say "plain" or the name of a topping we carry: "pepperoni", "sausage", "mushrooms," "olives," "onions", or "green peppers"
Retry 2	Sorry, I still did not get that. We only put one topping on each pizza. For a plain pizza, press 1. For pepperoni, press 2. Sausage, 3. Mushrooms, 4. Olives, 5. Onions, 6. Green peppers, 7.
Help	We like to keep it simple, so we only put up to one topping on each pizza. We are unable to only put the topping on a fraction of the pizza. Toppings cost an extra dollar. We carry: pepperoni, sausage, mushrooms, olives, onions, and green peppers.

Option	*Vocabulary*	*DTMF*	*Action*	*Confirm.*
Plain	Plain Cheese Tomato	1	Record state. Go to 1130	*If necessary*
Pepperoni	Pepperoni	2	Record state. Go to 1130	*If necessary*
Sausage	Sausage	3	Record state. Go to 1130	*If necessary*
Mushrooms	Mushrooms	4	Record state. Go to 1130	*If necessary*
Olives	Olives	5	Record state. Go to 1130	*If necessary*
Onions	Onions	6	Record state. Go to 1130	*If necessary*
Green Peppers	Green Peppers	7	Record state. Go to 1130	*If necessary*
Other toppings	<List of toppings other stores carry>		*I am sorry. We do not carry that topping. We carry: pepperoni, sausage, mushrooms, olives, onions, and green peppers.*	*If necessary*

Other Module Settings / Notes

Plaz

1130 Confirm Pizza

Speech Input

Entering from

1120

Prompts

Type	*Wording*
Initial	I head a <Medium> <Plain> pizza. Is that correct?
Timeout 1	I head a <Medium> <Plain> pizza. Is that correct? You can say "Yes" or "No"?
Timeout 2	Sorry, I still did not hear you. If a <Medium> <Plain> Pizza is correct, press 1. Otherwise, press 2.
Retry 1	Sorry, I didn't get that. Did you say you wanted a <Medium> <Plain> pizza. You can say "Yes" or "No"?
Retry 2	Sorry, I still did not get that. If a <Medium> <Plain> Pizza is correct, press 1. Otherwise, press 2.
Help	If your order is incorrect, say "no" and we will rebuild your pizza

Option	*Vocabulary*	*DTMF*	*Action*	*Confirm.*
Yes	<Standard Yes List> Correct	1	Go to 1210	*If necessary*
No	<Standard No List> Incorrect	2	Go to 1100	*If necessary*

Other Module Settings / Notes

Initial text cannot be skipped over

1210 Get Delivery Method

Speech Input

Entering from

1130

Abnormal: 1310

Prompts

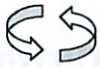
Type	*Wording*
Initial	Great! "Pickup" or "delivery"? **(Pause 1 sec)** Pickup in <20> minutes or wait <60> minutes for delivery.
Timeout 1	Sorry, I didn't hear you. You can say "pickup" or "delivery"? **(Pause 1 sec)** We deliver to Cambridge and Somerville at no extra charge.
Timeout 2	Sorry, I still did not hear you. To pick up your pizza in our store, press 1. For delivery, press 2.
Retry 1	Sorry, I didn't get that. You can say "pickup" or "delivery"? **(Pause 1 sec)** We deliver to Cambridge and Somerville at no extra charge.
Retry 2	Sorry, I still did not get that. To pick up your pizza in our store, press 1. For delivery, press 2.
Help	

Option	*Vocabulary*	*DTMF*	*Action*	*Confirm.*
Pickup	Pickup Store	1	Go to 1300	*Always*
Delivery	Delivery	2	Go to 1220	*Always*

Other Module Settings / Notes

Plaz

1220 Get Delivery Address



Speech Input

Entering from

1210

Abnormal: 1310

Prompts

Type	*Wording*
Initial	Ok. Where would you like your pizza delivered to? I am going to record you speaking your delivery information to the driver. Please include all information that the driver needs to deliver you pizza and then press pound.
Initial Abnormal	Ok. Where would you like your pizza delivered to? I am going to record you speaking your delivery information to the driver. This will replace previous recordings. Please include all information that the driver needs to deliver you pizza and then press pound.
Timeout 1	I didn't hear you. Please speak all information, such as your name, address, telephone number, and any additional instructions that the driver needs to deliver you pizza and then press pound.
Timeout 2	Sorry, I still did not hear anything. Please speak your name, address, telephone number, and any additional instructions that the driver needs to deliver you pizza and then press pound. **(Pause 1 sec)** If you would like pickup instead, press 1.

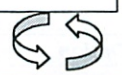
Other Module Settings / Notes

Record response up until press of pound and save as a "Voicemail"

Help prompts not possible here

If 1, go to 1300

1300 Final Confirmation



Speech Input

Entering from

1210, 1220

Prompts

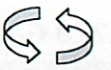
Type	*Wording*
Initial Pick up	Your order comes to <$10>. Can I place your order?
Initial Delivery	Your order comes to <$10>. Our delivery drivers accept cash only. Can I place your order?
Timeout 1	Sorry, I didn't hear you. Your order comes to <$10>. Can I place your order? You can say "yes" or "no"
Timeout 2	Sorry, I still did not hear you. To place your order, press 1. If something is incorrect, press 2.
Retry 1	Sorry, I didn't get that. Can I place your order? You can say "yes" or "no"
Retry 2	Sorry, I still did not get that. To place your order, press 1. If something is incorrect, press 2.
Help	If something is not right with your order, say "no". Otherwise, say "yes" to place your order.

Option	*Vocabulary*	*DTMF*	*Action*	*Confirm.*
Yes	<Standard Yes List>	1	Go to ~~1300~~ 1400. Submit order. Save caller ID to order as well.	*If necessary*
No	<Standard No List>	2	Go to 1220	*If necessary*

Other Module Settings / Notes

Plaz

1310 What's Wrong



Speech Input

Entering from

1310

Prompts

Type	*Wording*
Initial	I'm sorry. What's wrong? <Play If Pickup or If Delivery>
If Pickup	The "size," the "topping," or would you like "delivery" instead?
If Delivery	The "size," the "topping," the "delivery address," or would you like "pick up" instead?
Timeout 1	Sorry, I didn't hear you. What's wrong? <Play If Pickup or If Delivery>
Timeout 2	Sorry, I still did not hear you. If the size is incorrect, press 1. If you would like a different topping, or no topping at all, press 2. If you want <delivery> instead of <pickup> press 3. <If delivery> If you would like to change your delivery address and/or instructions press 4. <end If>
Retry 1	Sorry, I didn't get that. <Play If Pickup or If Delivery>
Retry 2	Sorry, I still did not get that. Sorry, I still did not hear you. If the size is incorrect, press 1. If you would like a different topping, or no topping at all, press 2. If you want <delivery> instead of <pickup>, press 3. <If delivery> If you would like to change your delivery address and/or instructions press 4. <end If>
Help	Please let me know what is incorrect with your order so we can go to that step to fix it. If the size is incorrect, say "size". If you would like a different topping, or no topping at all, say "topping". If you want <delivery> instead of <pickup>, say <delivery>. <If delivery> If you would like to change your delivery address and/or instructions, say "delivery address." <end If>

Option	*Vocabulary*	*DTMF*	*Action*	*Confirm.*
Size	Size <the list of sizes>	1	Go to 1100	*If necessary*
Topping	Topping Toppings No Topping <the list of toppings>	2	Go to 1120	*If necessary*
Delivery Method	Pick Up <if Delivery> Delivery <if Pickup>	3	Go to 1210	*If necessary*
Delivery Address	Delivery Address	4	Go to 1220	*If necessary*

1400 Thank You

Play Prompt

Entering from

1300

Prompts

Name	*Condition*	*Wording*
If Pickup	*If Pickup*	Great! Your order has been placed. We will see you in <20> minutes at 200 Main Street in Cambridge. Thanks for calling!
If Delivery	*If Delivery*	Great! Your order has been placed. Fresh Mike's pizza will be at your door in about <60> minutes. Call us back to get status information. Thanks for calling!

Condition	*Action*
Always	<Hang Up>

Module Settings / Notes

Plaz

ESD.051 Pizza Ordering Homework Parts 3+4

Notes:

- Final Deliverable is due by **3PM on Monday, February 28, 2011.**
- Angel.com Implementation is due by **3PM on Wednesday, March 2, 2011.**

The Problem:

You are tasked with designing a pizza ordering system for a small, independent pizza parlor that will take orders with a voice application. At minimum, a customer should be able to:

1. Choose a size (small, medium, or large).
2. Choose one topping (pepperoni, sausage, mushrooms, olives, onions, or green peppers).
3. Decide if the order is for pickup or for delivery.
4. If the customer asks for delivery, record their address. In Angel, you will record to an audio file using a Voicemail page.
   Play back the order, namely the size, toppings, and whether the customer asked for pickup or delivery.
5. Save the entire order, including the recording of the delivery address if applicable, to a spreadsheet. An employee at the pizza parlor will then be able see all the orders that need to be filled. In Angel, you will implement this with a Data page.

Additionally, you should include one retry prompt and one timeout prompt for each question.

Part 3 - The State Tables

Use your call flow diagram from part 2 to create a set of state tables. Remember, there should be one table for *each* state in your diagram. We strongly recommend that you use the state table templates posted on Stellar.

You must include **one retry** prompt and **one timeout** prompt for each state. Additionally, add **one help** prompt for half of your states.
In this first part, you are just writing the scripts. Later you will be designing a state diagram, and then implementing the system on Angel.com.

Part 4 - Angel.com Implementation

Use your state tables to implement your system on Angel.com. Then, call your system to test it out!

If you are still having difficulties setting up your Angel account by Tuesday, send us an email.

The purpose of this part is to get you familiar with the tools you will be using to build your individual and groups projects. Thus, we do not expect you to spend more than a couple of hours on this part. If it is taking longer, you may choose to implement a system with a simpler design than the one presented in parts 1-3. However, if you are having trouble implementing a system that meets the six requirements of the assignment (shown above), send us an email describing what you are stuck on so we can help out.

Final Deliverable

Once you have completed all the parts of the assignment, submit a **single** PDF file on Stellar with the following:

1. (Optional) a title page and table of contents
2. Scripts
3. Call flow diagram
4. State Tables
5. A phone number to call so we can try your system
6. If you successfully implemented the data page on Angel to save customer's orders
7. (requirement number 6 above), call your system to place a few orders. Then download and submit the spreadsheet generated by Angel containing all the orders that have been placed. To download this spreadsheet, click the "Site Builder" tab on Angel, click on your data file in the right column, and either copy and paste the spreadsheet from the webpage, or click "Download" to save it as an Excel file.

One way to merge all these documents together into a single PDF file is to export each as a PDF. Then, go to http://www.mergepdf.net/ and choose "Pick Files..." to upload the individual documents, one at a time. Finally, click "Merge PDF."