

# e la carte

Inventory management and recipe system

## **Team 1**

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## **Problem space**

Provide home cooks with the tools to plan meals based on the ingredients that are currently in the house, providing recipes based on those ingredients and additional criteria supplied by the home cook.

**Product Market:** people who store food and prepare meals at home.

# Field work

Three contextual inquiries

## Our subjects:

- Single female, early 20's -- prepared a quick meal after work
- Single male and partner, both in mid-30's -- prepared a weeknight meal after work that they had planned earlier in the week
- Married couple, mid-50's -- planned and prepared a dinner for their extended family on the weekend

All subjects stored food in home and prepared meals there.

## The observations:

- Planning and preparing dinner
  - Video and photography
  - Questions during the observation
  - Asked subjects to describe what they were doing
- Completed interviews following the observations.
- Obtained artifacts they used in meal planning and preparation.

# Field work

Three contextual inquiries

## Findings:

- **Constraints**

- Time

- Knowledge of inventory

- Managing food preparation timeline

- Preferences of other diners

- Health and nutrition

- Cost

# Field work

Three contextual inquiries

## Findings:

- **Flow model**

- breakdowns**

- between meal planner and the food inventory
    - between meal planner and cooking instructions
    - between meal preparer and the cooking instructions
    - between meal preparers trying to work together

# Field work

Three contextual inquiries

## Findings:

- **Sequence**

- breakdowns**

- between plan and food inventory
    - between plan and equipment inventory
    - trying to share tools and artifacts between preparers
    - in managing the timeline of the meal preparation

# Field work

Three contextual inquiries

## Findings:

### • Cultural

#### **influences on the meal planner/preparer**

- diner preferences (What sounds good right now?)
- work limits time for cooking (Need to prepare meal in ten minutes or less so I can go to bed.)
- guests (What will my grandchildren eat?)
- health (I'm loosely following Weight Watchers.)
- budgets (Use up food before it expires.)

# Field work

Three contextual inquiries

## Findings:

- **Physical**

- breakdowns**

- cook didn't find necessary ingredient where he thought it would be
    - recipes are too far away from work area
    - inventory is too disorganized for easy viewing



# Field work

Three contextual inquiries

## Findings:

### • **Artifact**

- recipes with ingredients and directions listed
- charts with cooking times by servings
- tips on executing cooking techniques
- photos with recipes

# Requirements

## Goals

- Improve planning and cooking
- Improve kitchen organization

## Effectiveness

- Show recipes based on the inventory and user criteria
- Provide a time management tool during cooking

## Efficiency

- Eliminate need to re-input criteria
- Have the system maintain inventory with minimal input from user

# Requirements

## Utility

- Allow users to set criteria to narrow recipe search while maintaining basis for search as inventory on hand
- Allow users to search inventory
- Organize preparation time
- Provide cooking tips to enhance users' skill level
- Access inventory during shopping
- Find substitutions for ingredients
- Have a tutorial and help

## Safety

- Physical – monitor expiration on products
- Monitor for food allergies
- “e” invite for allergy check on guests
- Minimal input from user for maintaining inventory
- Pause or ability to slow down process as needed
- Finding substitutions for ingredients

# Requirements

## Learnability

- Display recipes in conventional way
- Display inventory using notation that user purchases items by (pounds for potatoes, individual units for grapefruit...)
- Have metric notation option
- Provide tutorial and help

## Memorability

- Use conventional notation
- Provide tutorial and help
- Have a “favorites” button for commonly-chosen recipes
- System uses initial criteria choices as subsequent default
- Allow user to input inventory with auditory cues

# Conceptual Model

Key concept is tying meal planning to inventory.

System maintains a current inventory of food and cooking utensils in the home and suggests recipes based on that inventory.

Factors at play:

additional criteria of user -- cuisine, health, favorites, cost

expiration date tracking by system -- what to use up before it spoils

## Interface

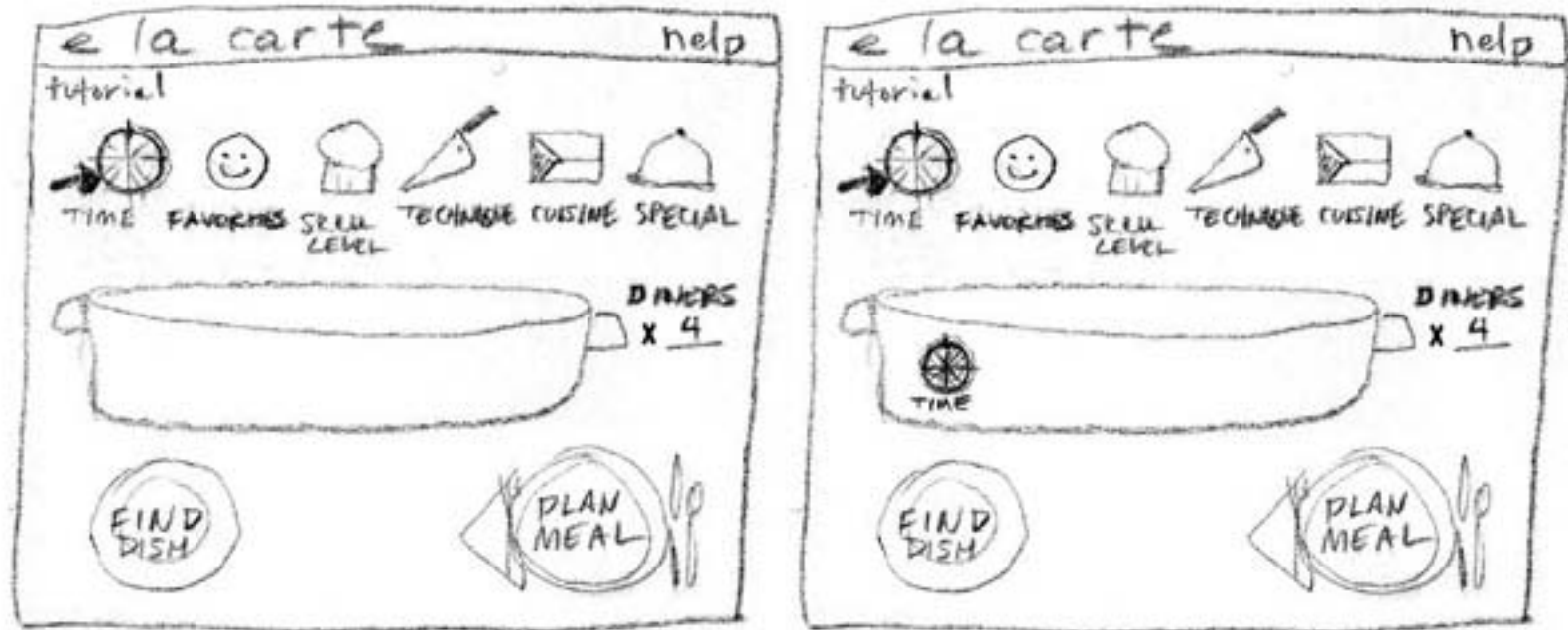
A screen located in the kitchen. Input from user would be via touch screen and via auditory commands.

The inventory tracking would rely on RFID tag scanning, a scale to monitor items by weight (flour, sugar) and auditory input from user.

A web site will also allow remote access to the system.

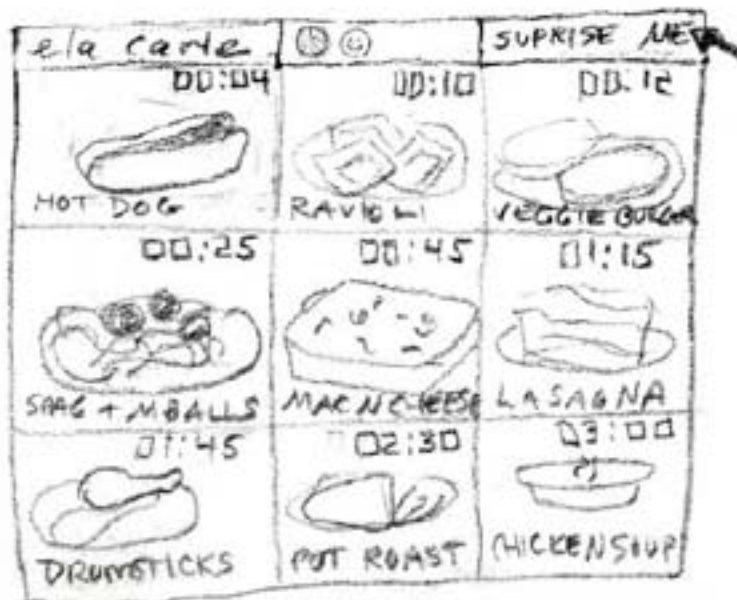


# Paper prototype



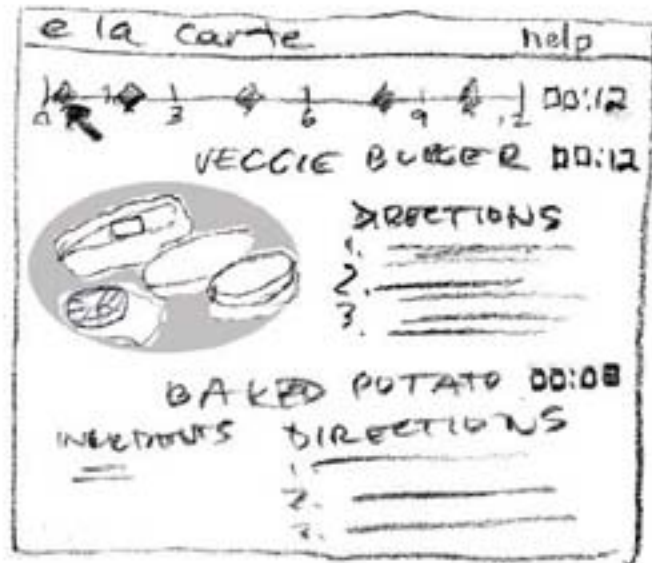
In the first low fidelity -- we envisioned starting by choosing your criteria for a recipe, with the inventory as the most important and always selected criteria.

# Paper prototype



The screen of recipe possibilities, and a listing of multiple choices for a particular type of dish (macaroni and cheese). Time to prepare is the most visible criteria on the interface.

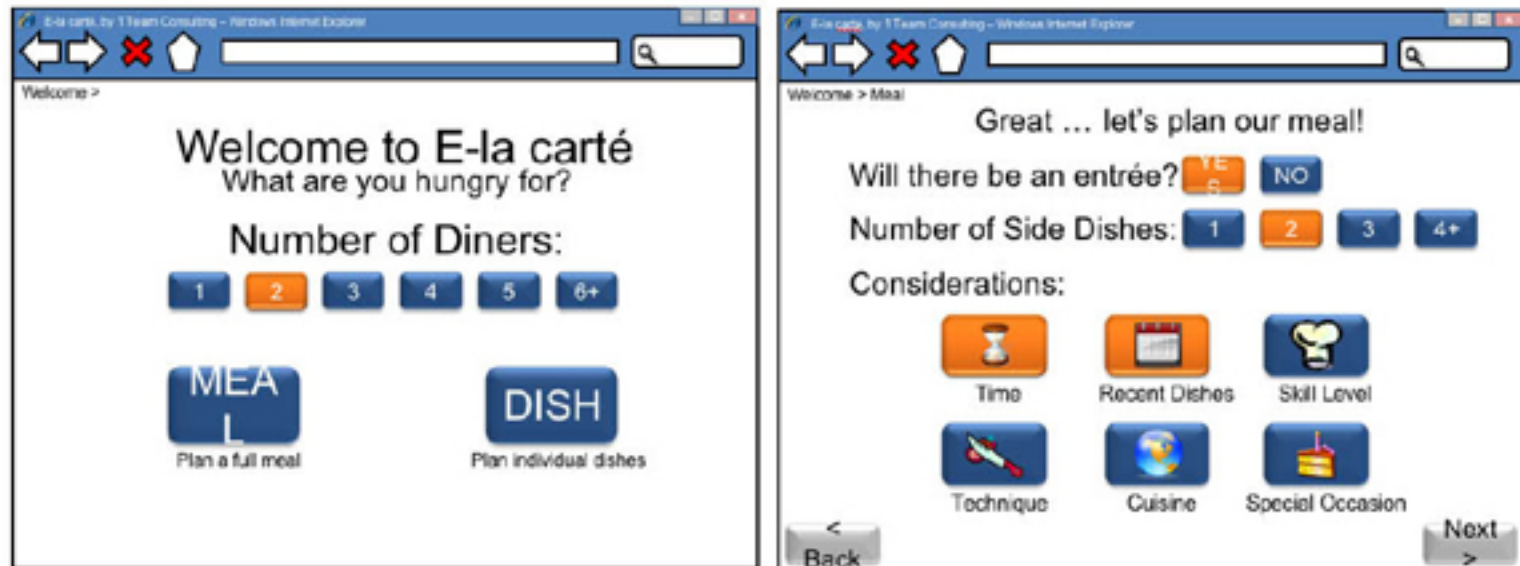
# Paper prototype



Once a meal is chosen, a timeline appears that combines all the steps in the correct sequence for the complete meal preparation.



# Paper prototype



We explored ways to input the number of diners and how many dishes in the meal.

# Interactive prototype



The biggest change for the high-fidelity prototype was that the criteria would be set as an initial step in using the system. The main screen for using the system after that would display the recipes based on those presets and the current inventory.

# User testing

## **Users in test:**

1. single, female user, early 20's
2. married working mother of two young children, mid 30's

## **Tasks:**

1. view vegetable inventory
2. choose a sandwich
3. change selection to a burger
4. go through steps to cook the meal
5. after cooking, view updated inventory

## **Packet included:**

1. Scenarios
2. Walkthrough of prototype
3. Tasks

# User testing

## Results

The questions in the structured interview ranged from task completion to ease of exploration.

Questions that were answered “no” by one subject included having enough visual clues to access all functions and ease of understanding.

Questions on the interface elements (the timeline and other visuals) -- received high ratings from one, but one didn't even notice the timeline until it moved. One subject commented that “blue [the interface color] makes people less hungry.”

Interest in concept, on a scale of 1 to 10:

Use e la Carte in current household: 2 and 8

Inventory being monitored automatically: 8 and 9

# User testing

## Results

Favorite features of the prototype:

Being able to scroll through recipes under a category (types of sandwiches).

Comment:

“ I think the touch-screen slide feature would be really cool there, too.”

“Inventory shows what I have.  
I don't have to search.”



# User testing

## Results

Least favorite feature of the prototype:

- Need more direction in the process.
- Need to see how many steps are in a recipe. Need to be able to see all recipes before choosing, not just the ones within a multiple listing.

Comment:

“For me, if there was a recipe that took 10 minutes, but had 12-15 steps, then I’m probably not going to make it, especially if I’m in a rush.”



# User testing

## Results

Missed in prototype:

- More directions
- Settings screen

Comment:

“I think it would have also been neat to try to turn off foods (cuisines) that I know my family wouldn't eat, such as Thai, and see the system react accordingly. I think if that was shown, that would be cool looking.”



## **Improvements and future direction**

- When user clicks on a dish, show the recipe so the user can see how many steps are involved, not only how long it takes to prepare
- Highlight more clearly the steps in a recipe when touched
- Provide clear directions on functions
- Make timeline more intuitive
- Work on a multiple-user interface that allows other family members and guests to help choose recipes and also to allow for multiple cooks
- Prototype the settings interface and perform user testing
- Work on fully automating the inventory process