

Using a Smartphone for Behavior Change Studies

An Introduction to Fittle

28 August 2017

A Behavior Change Study involves *(for this discussion)*

- Pre-study (*Performed outside of Fittle*)
 - Hypotheses, Experiment Design, Recruiting, Screening, Pre-survey/assessment, Assigning people to study conditions, etc.
- Study (*Using Fittle*)
 - Asking people to do things
 - Assessing what they do
 - Communicating about their doings
 - Adjusting the ask and repeat, not necessarily in this order

Part of the study is implemented by the system described here
- Post-Study (*Performed outside of Fittle*)
 - Post-survey, Analyze the data, Compensate participants, etc.

Fittle Stakeholders

Roles	Responsibilities
Domain Expert	Develops programs of activities in a domain and authors descriptions of those activities (content such as activity descriptions and daily messaging)
Study Administrator	Sets up a study and coordinates and oversees the people's participation in the study. This includes assigning people into the study, running pre-/post- surveys etc.
Participant	Participates in behavior change studies as the intended audience for Fittle content.
System Programmer	(Optional) Supports 'agile' study development by developing and/or maintaining the PARCcoach code base and ancillary data (e.g., edit internal JavaScript Object Notation, JSON, files).
Coach Designer	(Optional) Creates external coaching agent(s) that interacts with PARCcoach through an App Programming Interface (API)

Studies Presented in Two Views

Admin via Web

Admin Sign Out

Question Administration

What to ask: goes here

What kind: Enter a text value

Tag: tag value goes here

What to answer: choice1, choice2, ...

Who: admin@parc.com

Ask Date: 2016-08-19 Ask Date: 12:00

Expire Date: 2016-08-19 Expire Time: 12:00

Question Sequence: 1

Send Notification:

Ask Question

History

User	Question	Tag	Ask Datetime	Expire Datetime	Answer	Date
les.nelson@parc.com	This is a test message that would not be part of a study	test	2016-08-19 07:00:00	2016-08-19 23:00:00	OK	08/19/2016 12:32:54
les.nelson@parc.com	Remember to eat your fruits and vegetables today	control_affirmation	2016-08-20 09:00:00	2016-08-22 19:00:00	unanswered	08/19/2016 12:32:51
les.nelson@parc.com	This is a test message that would not be part of a study	test	2016-08-21 07:00:00	2016-08-21 23:00:00	unanswered	08/19/2016 12:32:51
les.nelson@parc.com	This is a test message that would not be part of a study	test	2016-08-22 07:00:00	2016-08-22 23:00:00	unanswered	08/19/2016 12:32:51
les.nelson@parc.com	This is a test message that would not be part of a study	test	2016-08-23 07:00:00	2016-08-23 23:00:00	unanswered	08/19/2016 12:32:51
les.nelson@parc.com	This is a test message that would not be part of a study	test	2016-08-12 07:00:00	2016-08-12 23:00:00	OK	08/12/2016 14:31:05
nelson@parc.com	Remember that time you did something nice for someone affirmation	test	2016-08-13 09:00:00	2016-08-15 19:00:00	OK	08/15/2016 13:58:57
nelson@parc.com	This is a test message that would not be part of a study	test	2016-08-14 07:00:00	2016-08-14 23:00:00	unanswered	08/12/2016 14:31:01
nelson@parc.com	This is a test message that would not be part of a study	test	2016-08-15 07:00:00	2016-08-15 23:00:00	OK	08/15/2016 13:59:00
nelson@parc.com	This is a test message that would not be part of a study	test	2016-08-16 07:00:00	2016-08-16 23:00:00	unanswered	08/12/2016 14:31:01
nelson@parc.com	Remember that time you did something nice for someone affirmation	test	2016-09-03 09:00:00	2016-09-05 19:00:00	unanswered	08/19/2016 14:12:08
nelson@parc.com	This is a test message that would not be part of a study	test	2016-09-04 07:00:00	2016-09-04 23:00:00	unanswered	08/19/2016 14:12:08
nelson@parc.com	This is a test message that would not be part of a study	test	2016-09-05 07:00:00	2016-09-05 23:00:00	unanswered	08/19/2016 14:12:08
nelson@parc.com	This is a test message that would not be part of a study	test	2016-09-06 07:00:00	2016-09-06 23:00:00	unanswered	08/19/2016 14:12:08

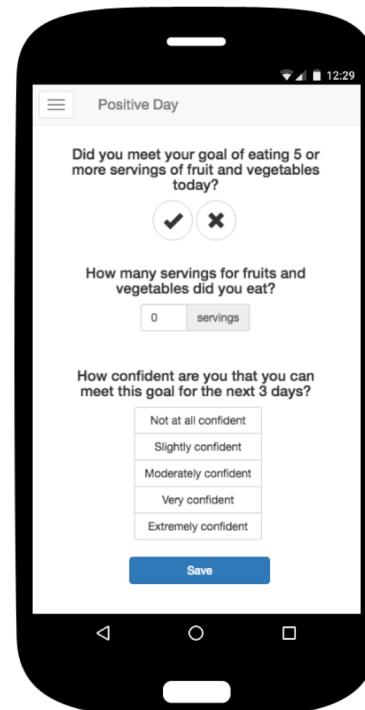
Upload Questions

File: Choose File no file selected

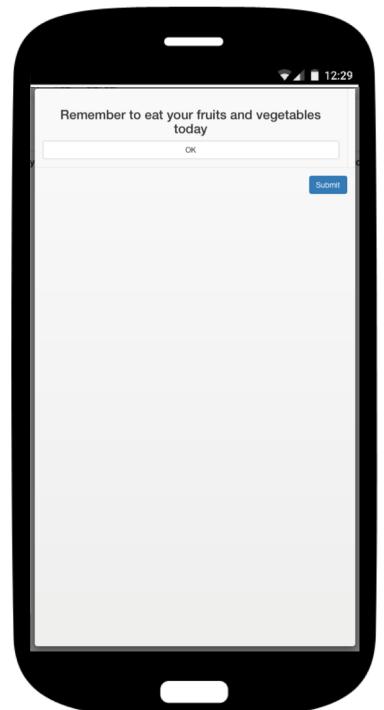
Import

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User in App

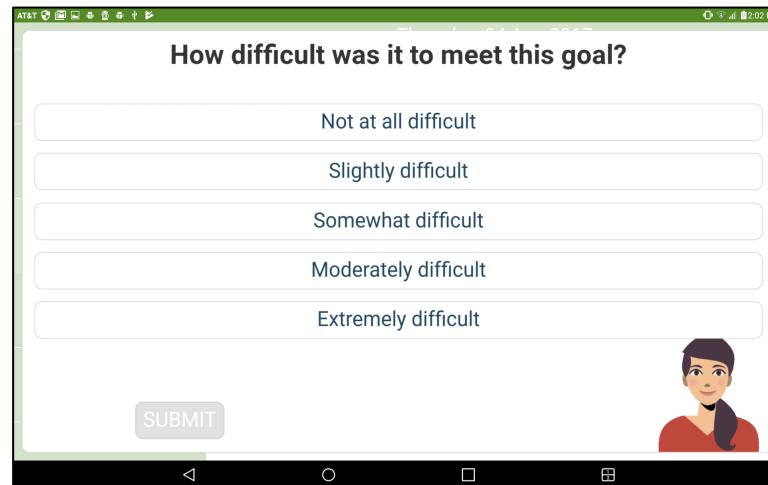
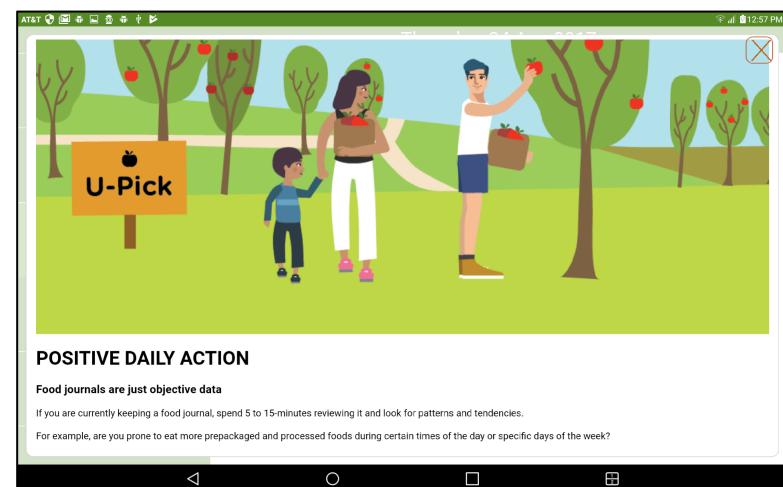
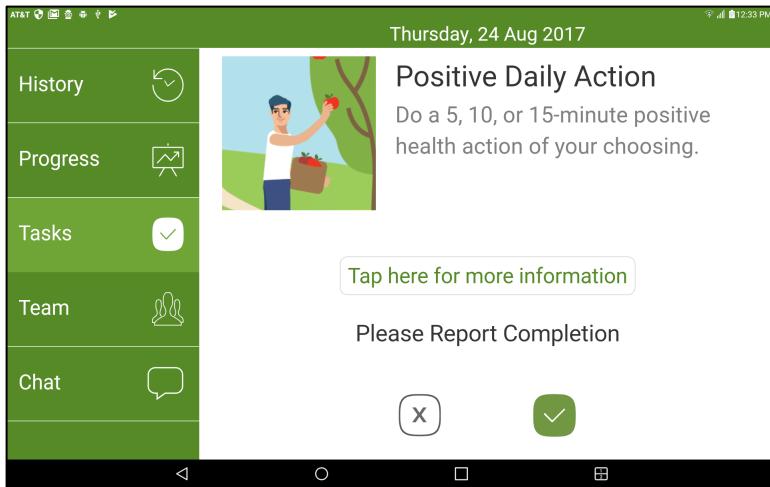


Activities/
Reports

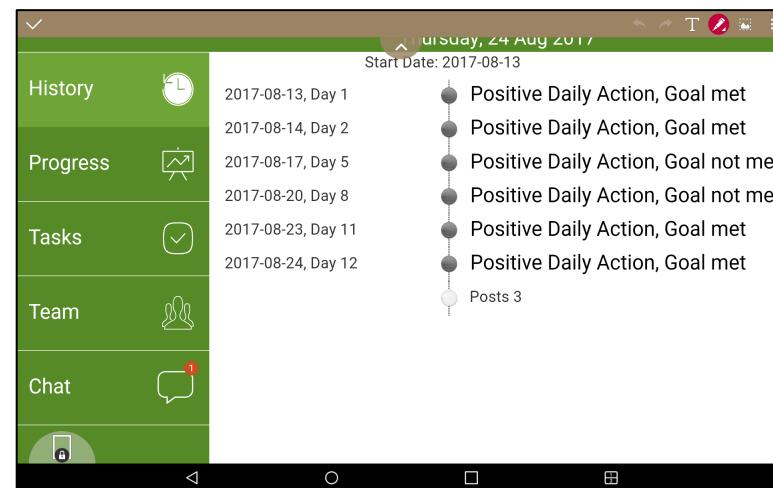
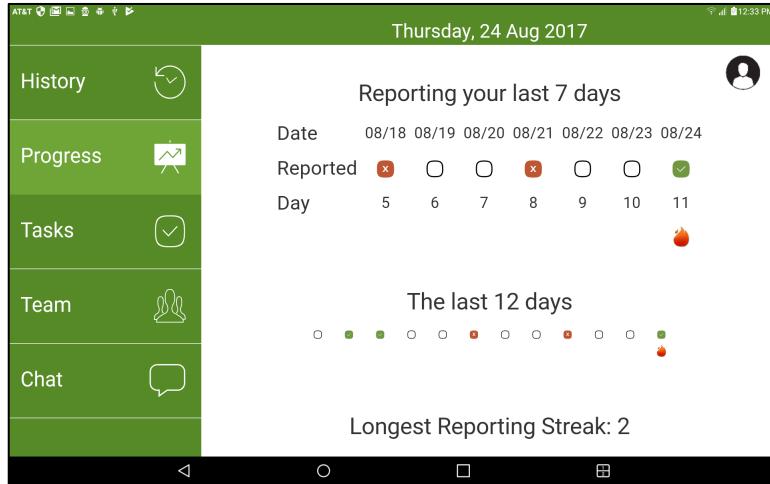


Questions/
Answers

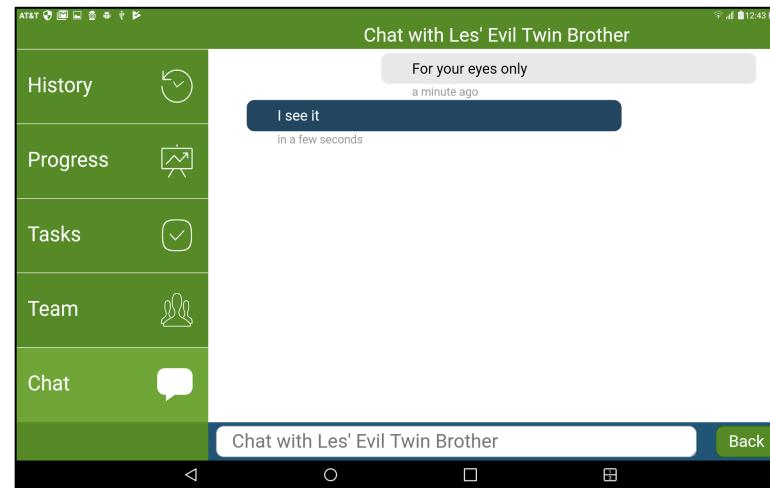
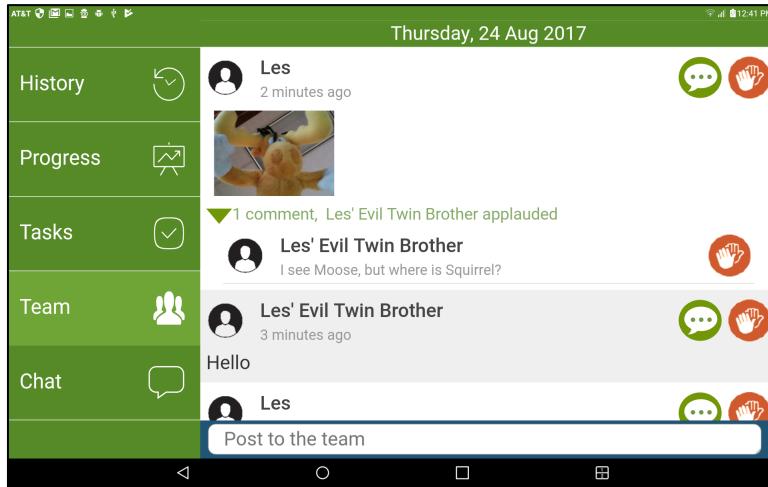
DEMO: About today



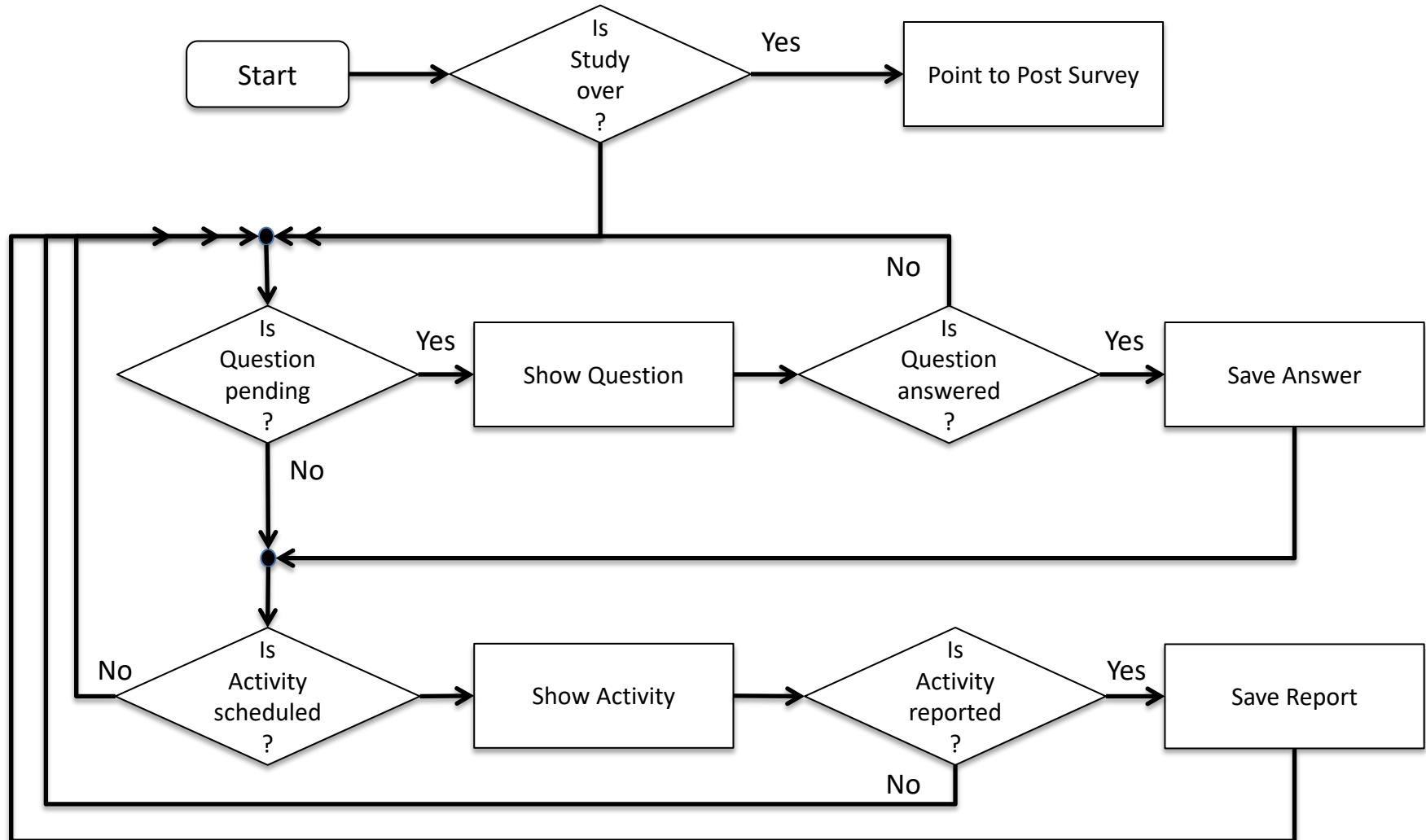
DEMO: About what's happened



DEMO: About socializing



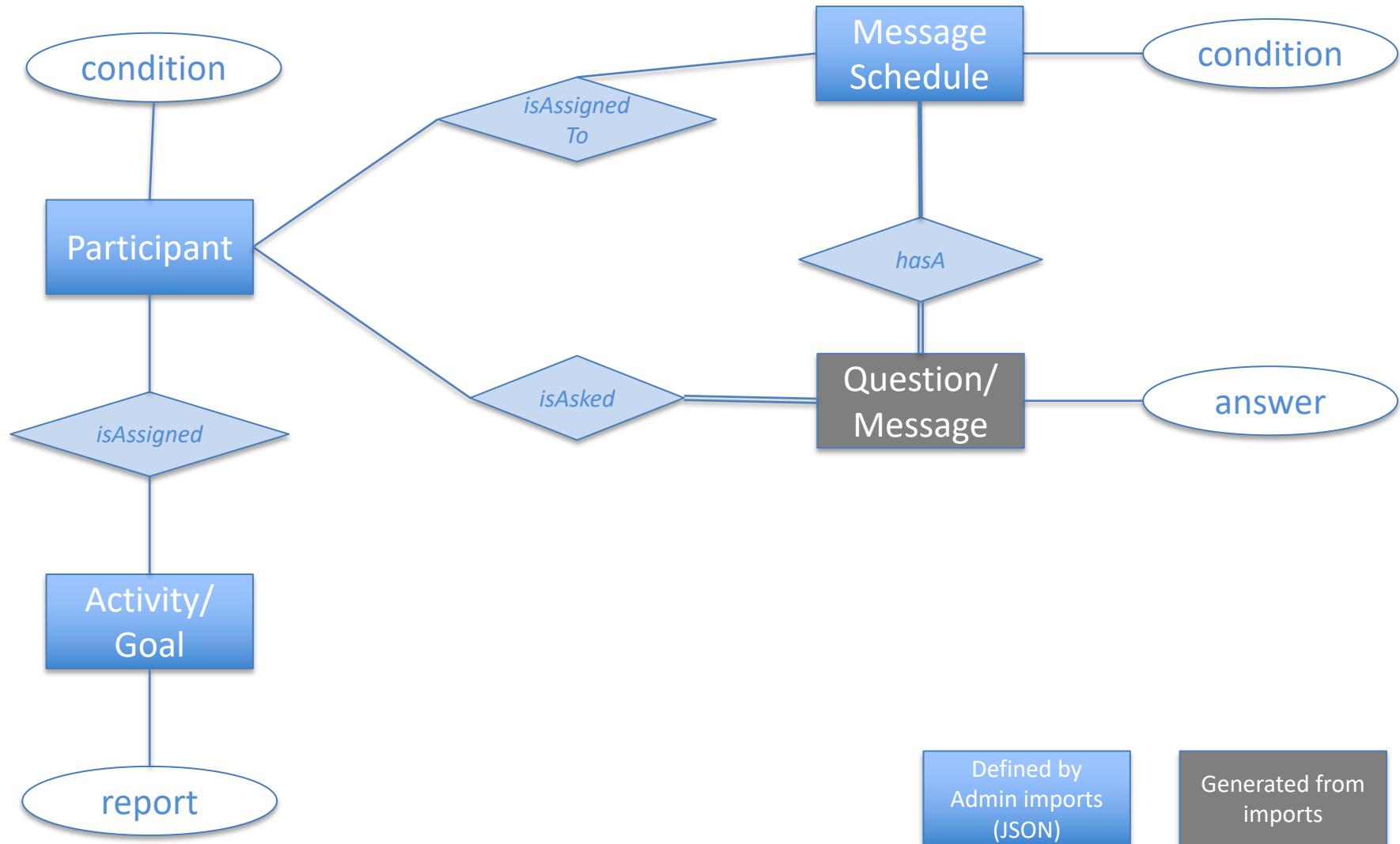
What the App Does Daily



Question Pending: AskDateTime <= Now < ExpireDateTime

Activity Scheduled: By Date (Today+00:00 <= Now < Today+24:00)

Developing Studies: Define using a Few Concepts



Example Study Admin specs: JSON Questions Schedule

Participants

```
[{"emailAddress": "lnelson@parc.com", "condition": "I2-10", "goalContent": "Walk", "studySpecific": {"name": "Les", "gender": "robot", "age": "105", "location": "Here", "selfEfficacy": "high", "implementationIntention": "yes", "reminders": "yes", "reminderDistribution": "masked", "reminderCount": "7"}, "interactions": {"goalType": "", "goalSpecific": "", "dailyGoalText": "", "goalContent": "", "choice": "", "place": "", "person": "", "eventTime": "", "reminderPeriod": ""}}
```

Activities

'Interactive' Question Schedule

The diagram illustrates the flow from study participants to their interactions, which then lead to an 'Interactive' question schedule. A large blue circle encompasses the 'Participants' and 'Interactions' sections. Arrows point from the 'Participants' section to the 'Interactions' section, and from the 'Interactions' section to the 'Interactive' question schedule.

```
/* Detailed description of the JSON code */  
// sequences: [  
//   {  
//     "sequenceName": "eatSlowly",  
//     "constraints": [  
//       {  
//         "attribute": "goalType",  
//         "value": "eatSlowly"  
//       }  
//     ],  
//     "askDate": "0",  
//     "askTime": "07:00",  
//     "expireDate": "28",  
//     "expireTime": "23:59",  
//     "questions": [  
//       {  
//         "tag": "choice",  
//         "text": "Which meal would you like to try this at?",  
//         "kind": "list-choose-one",  
//         "choices": [  
//           "breakfast",  
//           "lunch",  
//           "dinner"  
//         ],  
//         "attributeToSet": "choice"  
//       },  
//       {  
//         "tag": "place",  
//         "text": "Where would you have this meal?",  
//         "kind": "text",  
//         "choices": [],  
//         "attributeToSet": "choice"  
//       },  
//       {  
//         "tag": "person",  
//         "text": "Who will you have this meal with?",  
//         "kind": "text",  
//         "choices": [],  
//         "attributeToSet": "place"  
//       },  
//       {  
//         "tag": "eventTime",  
//         "text": "When will you have this meal?",  
//         "kind": "time",  
//         "choices": [],  
//         "attributeToSet": "eventTime"  
//       },  
//       {  
//         "tag": "reminderPeriod",  
//         "text": "How soon before the meal would you like to be reminded of your goal?",  
//         "kind": "time",  
//         "choices": [  
//           "15 minutes",  
//           "30 minutes",  
//           "45 minutes",  
//           "60 minutes"  
//         ],  
//         "attributeToSet": "reminderPeriod"  
//       }  
//     ]  
//   },  
//   {  
//     "sequenceName": "walk",  
//     "constraints": [  
//       {  
//         "attribute": "goalType",  
//         "value": "walk"  
//       }  
//     ],  
//     "askDate": "0",  
//     "askTime": "07:00",  
//     "expireDate": "28",  
//     "expireTime": "23:59",  
//     "questions": [  
//       {  
//         "tag": "choice",  
//         "text": "What type of walk would you like to do?",  
//         "kind": "list-choose-one",  
//         "choices": [  
//           "jog",  
//           "walk",  
//           "run"  
//         ],  
//         "attributeToSet": "choice"  
//       },  
//       {  
//         "tag": "place",  
//         "text": "Where would you like to walk?",  
//         "kind": "text",  
//         "choices": [],  
//         "attributeToSet": "place"  
//       },  
//       {  
//         "tag": "person",  
//         "text": "Who will you walk with?",  
//         "kind": "text",  
//         "choices": [],  
//         "attributeToSet": "place"  
//       },  
//       {  
//         "tag": "eventTime",  
//         "text": "When will you walk?",  
//         "kind": "time",  
//         "choices": [],  
//         "attributeToSet": "eventTime"  
//       },  
//       {  
//         "tag": "reminderPeriod",  
//         "text": "How soon before the walk would you like to be reminded of your goal?",  
//         "kind": "time",  
//         "choices": [  
//           "15 minutes",  
//           "30 minutes",  
//           "45 minutes",  
//           "60 minutes"  
//         ],  
//         "attributeToSet": "reminderPeriod"  
//       }  
//     ]  
//   }  
// ]
```

How to Run a Study: Design

- What activities are participants going to do on which days?
- What messaging are people going to get on which days and under what constraints (e.g., constrained by treatment vs. control condition)?

```
[  
  {  
    "code": "269",  
    "activity": "I2_Walk",  
    "tag": "I2",  
    "content": "content/I2/I2_Walk.html",  
    "title": "Walk",  
    "description": "Walk today",  
    "thumbnail": "content/I2/eatslowlythumb.png"  
  },  
  {  
    "code": "270",  
    "activity": "I2_Eat_Veggies",  
    "tag": "I2",  
    "content": "content/I2/I2_Eat_Veggies.html",  
    "title": "Eat Veggies",  
    "description": "Eat vegetables today",  
    "thumbnail": "content/I2/eatslowlythumb.png"  
  },  
  {  
    "code": "271",  
    "activity": "I2_Eat_Slower",  
    "tag": "I2",  
    "content": "content/I2/I2_Eat_Slower.html",  
    "title": "Eat Slowly",  
    "description": "Eat slowly today",  
    "thumbnail": "content/I2/eatslowlythumb.png"  
  }  
]
```

How to Run a Study: Design

- What activities are participants going to do on which days?

```
[  
 {  
   "code": "269",  
   "activity": "I2_Walk",  
   "tag": "I2",  
   "content": "content/I2/I2_Walk.html",  
   "title": "Walk",  
   "description" : "Walk today",  
   "thumbnail": "content/I2/eatslowlythumb.png"  
 },  
 {  
   "code": "270",  
   "activity": "I2_Eat_Veggies",  
   "tag": "I2",  
   "content": "content/I2/I2_Eat_Veggies.html",  
   "title": "Eat Veggies",  
   "description" : "Eat vegetables today",  
   "thumbnail": "content/I2/eatslowlythumb.png"  
 },  
 {  
   "code": "271",  
   "activity": "I2_Eat_Slower",  
   "tag": "I2",  
   "content": "content/I2/I2_Eat_Slower.html",  
   "title": "Eat Slowly",  
   "description" : "Eat slowly today",  
   "thumbnail": "content/I2/eatslowlythumb.png"  
 }]
```

```
[  
 {  
   "contentRoot": "/content/I2/activityScheduleDefault.json",  
   "startDayForThisContent": null,  
   "startDateForThisContent": null  
 }]  
 ]
```

EAT MORE VEGETABLES

This habit is about getting yourself to eat at least 5 servings of vegetables each day as advised by the Centers for Disease Control & Prevention (CDC) to help reduce your risk of various chronic diseases like stroke, type 2 Diabetes, some types of cancer, and even heart disease.

To get started on this habit right away, choose as many veggies as you would like from the list below and include them in your diet as indicated in the daily tip from PARC Coach.

Veggie List

- Asparagus
- Broccoli
- Brussels Sprouts
- Cabbage
- Carrots
- Cauliflower
- Celery
- Collard Greens
- Cucumber
- Eggplant
- Fennel

How does this habit work?

How much is a vegetable serving?

What about fruit, can I have it and how much?

BEFORE YOU BEGIN PRACTICING THIS HABIT PLEASE NOTE:
Leafy greens have blood clotting properties (vitamin K), so if you are on blood thinners, be safe and check in with your doctor before increasing your daily vegetable consumption.

For more information on serving sizes for some of your favorite veggies and fruit see: [What is one Serving of Fruit or a Vegetable?](#)

```
{  
   "title": "Static Schedule",  
   "scheduling": "FromRegistered",  
   "schedule": [  
     {  
       "activity": "I2_Walk",  
       "scheduledDay": 0  
     },  
     {  
       "activity": "I2_Walk",  
       "scheduledDay": 1  
     },  
     {  
       "activity": "I2_Eat_Veggies",  
       "scheduledDay": 2  
     },  
     {  
       "activity": "I2_Eat_Slower",  
       "scheduledDay": 3  
     },  
     {  
       "activity": "I2_Walk",  
       "scheduledDay": 4  
     },  
     {  
       "activity": "I2_Eat_Veggies",  
       "scheduledDay": 5  
     },  
     {  
       "activity": "I2_Eat_Slower",  
       "scheduledDay": 6  
     },  
     {  
       "activity": "I2_Walk",  
       "scheduledDay": 7  
     },  
     {  
       "activity": "I2_Eat_Veggies",  
       "scheduledDay": 8  
     },  
     {  
       "activity": "Relax Today",  
       "scheduledDay": 9  
     }  
   ]  
}
```

How to Run a Study

- Design the Study, including the following concepts:
 - What activities are participants going to do on which days?
 - What messaging are people going to get on which days and under what constraints (e.g., constrained by treatment vs. control condition)?
- Set up the Study Logistics
 - What individuals will participate, in what conditions?

How to Run a Study

- Design the Study, including the following concepts:
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Adding in a Coaching Model

