Welcome to BioHack Your Blood Sugar with FileMaker–

My Name is Daisy Graves and I am your presenter.
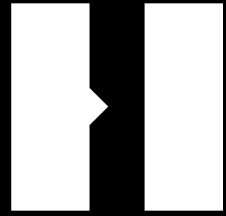
A little about me.

Senior Developer at Harmonic

Graduated with a MBA in Accounting, and Management Information Systems

Mom of 2 teen boys Randy –17yrs old and

Blake –15yrs old

Copper – 11 week old golden retriever

Why is that important?

Randy is Type 1 Diabetic – Diagnosed at 12

October 2014 will forever be etched in my mind. It all started off with Randy having a cast on his arm, from a soccer collision during a game.
Saturday, October 18th he played his first soccer game in the Texas heat, after getting his cast off. He complained of being dizzy and over heated.
We assumed he was dehydrated and exhausted from not playing for 6 weeks. He went to school on Monday and Tuesday, Called to come home early
Wednesday complaining of a headache and not feeling right. Thursday went to practice, played in a game Saturday the 25th, and then we went and met up
with friends to carve pumpkins.
He started to complain again of not feeling well and just wanted to go home. – he just felt off.
Sunday he woke up crying and said he felt like he was dying and wanted to go to the hospital. He looked pale and grey.
We walked in, they did triage on him and told him to sit and not move.
His blood pressure was abnormal and he was quickly moved to a ER bed, with a crash cart to follow.
They tried to get an IV started, finally got blood work done, and tried to get a glucose reading several time and could not.
He was ultimately diagnosed Type 1 diabetic on October 26th, 2014. Randy was then transferred to the ICU were we did a 3 day stint.
Finally upon discharge we were told what his admittance Glucose level was... 1024. That is right 1-0-2-4. He has set the record at Dell children's hospital
for the highest blood sugar and still conscious/alive. Now for those of you who do not know normal blood sugar range is 70-100.
Since then our world has never been the same. I started off managing this for a 12/13 year old, and teaching him how to managed this on his own.

Today

My 17 year old son was diagnosed when he was 12.

Competitive soccer player

About to go off to college - away from home to play soccer.

Fast forward to current date. he is a 17 year old young man. He understands what he is suppose to do. But sometimes life happens and it is not as easy at it once was. He plays club and high school soccer, is driving and going out with friends. Not to mention he will be going off to college next year and playing D2 soccer.
The tool set we currently have are just in adequate to accommodate this lifestyle. I had a dream to have an app, that can integrate with the apps he is already using. I would like it to analyze data, make recommendations, send notifications, and it has to be user friendly and flexible.
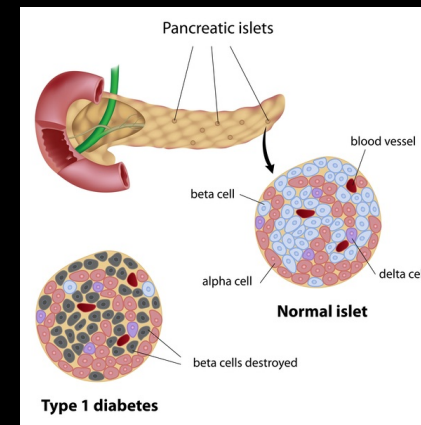
What is Type 1 Diabetes?

Pancreas no longer produces insulin

Insulin Dependent

Onset usually happens in juveniles

On rare occasion in adults

Treatment requires constant oversight and manipulation

Pancreatic islets

blood vessel

beta cell

alpha cell

delta cell

Normal islet

beta cells destroyed

Type 1 diabetes

#FileMakerDevCon

So First What is type 1 diabetes?
Most people do not understand or they assume all diabetes is the same. Which is simply not true.
Type 1 is when the pancreas is no longer able to produce insulin. Which it manifest as an imbalance of glucose or better know as blood sugar.
Type 1 is usually diagnosed in juveniles, but on rare occasion this can manifest in adults as well. For instance Steve (my boss) was diagnosed at 46.
Treatment varies depending on whether blood sugar is high or low. They both have their own complications. T1Diabetics are required to to take insulin for two different purposes. A constant release of insulin – know as a basal –and one for carbohydrates and/or sugar – also know as a bolus.
Diet and exercise alone can NOT control the blood sugar of type 1 diabetics. Which means they are insulin dependent – they are required to take a synthetic form of insulin via shot or pump, to regulate the impact of food, and correcting …
Although you can not control type 1 with diet and exercise, they do play a factor in what impacts your blood sugar at a give time. Sleep or the lack there of – which puts stress on your body will effect your sugar as well.
For example the first signs of an illness is your blood sugar will spike before you show any signs or symptoms.
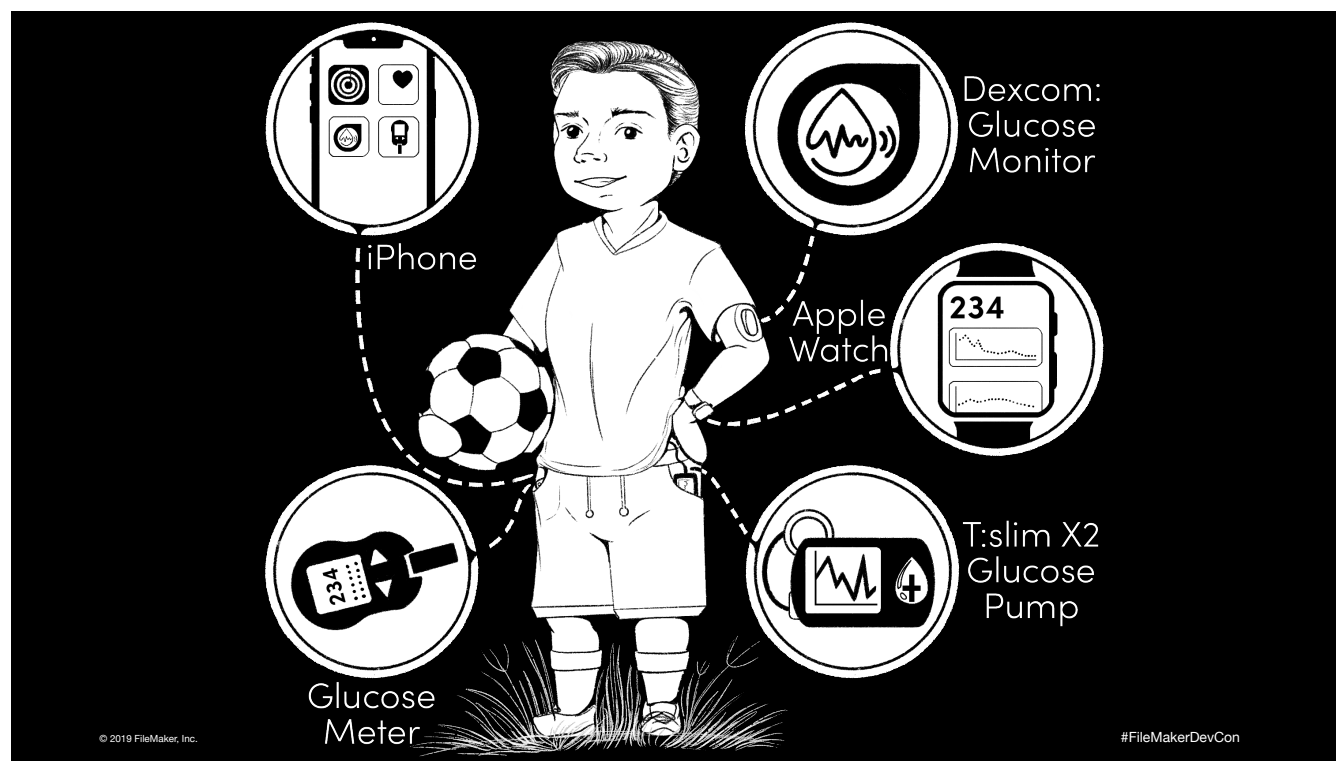
For Type 1's there are task you have to do everyday.
Constantly check you sugar
Calculate your dietary intake for any carbohydrates you might eat
Give you self insulin if you are too high and for the those carbs you just calculated.
There is also the risk of going "Low", if you over correct or take to much insulin for the carbs or if you did not eat all you food you dosed for.
For those that are "lucky" insurance can cover an insulin pump and a continuous glucose monitoring system, which makes day to day a little bit more manageable.
Even with these two apparatuses. Technology is still lacking a bit. Which is why I wanted to build this app to help my son and other diabetics. Now this app is still in beta, and I hope to have a lot more components built in. The hope for this app is not only assist diabetics, but anyone that wants to have a healthy lifestyle.
So what are these components we will use this terminology later:
Dexcom – Continuous Glucose Monitoring system (CGM) – wear able device that constantly reads blood sugar levels
Glucose Meter with bluetooth technologies – manually check sugar if Dexcom is unavailable.
Apple watch, which serves as a display of his blood sugar from the Dexcom, and tracks activity and vitals
T–Slim x:2 – Insulin Pump – gives constant dosing of insulin throughout the day and night. Calculates and delivers the amount of insulin you need for the number of carbohydrates you enter.
Glucose meter– serves as a back up if his dexcom is not working or in the need to calibrate
iPhone – Heath App – the local database on iphone that all the apps write too
1Goal4Me – Filemaker app which uses the the FileMaker iOS SDK

So why did I choose Filemaker to be the basis of my app?

Why not? FM gives us flexibility, rapid development and deployment. But most importantly is ease of control to customize and connect with other technologies.

Along With the SDK and data api I am able to retrieve data from my sons devices and bring to a central location.

Once I have the data I can manipulate it to how I see fit. I am able to create my own reports, look at trends. See a comprehensive view of how all the systems effect each other.

I can then in turn take these reports to the doctors office and we collectively use the data as a feedback loop to make decisions on treatment plans.
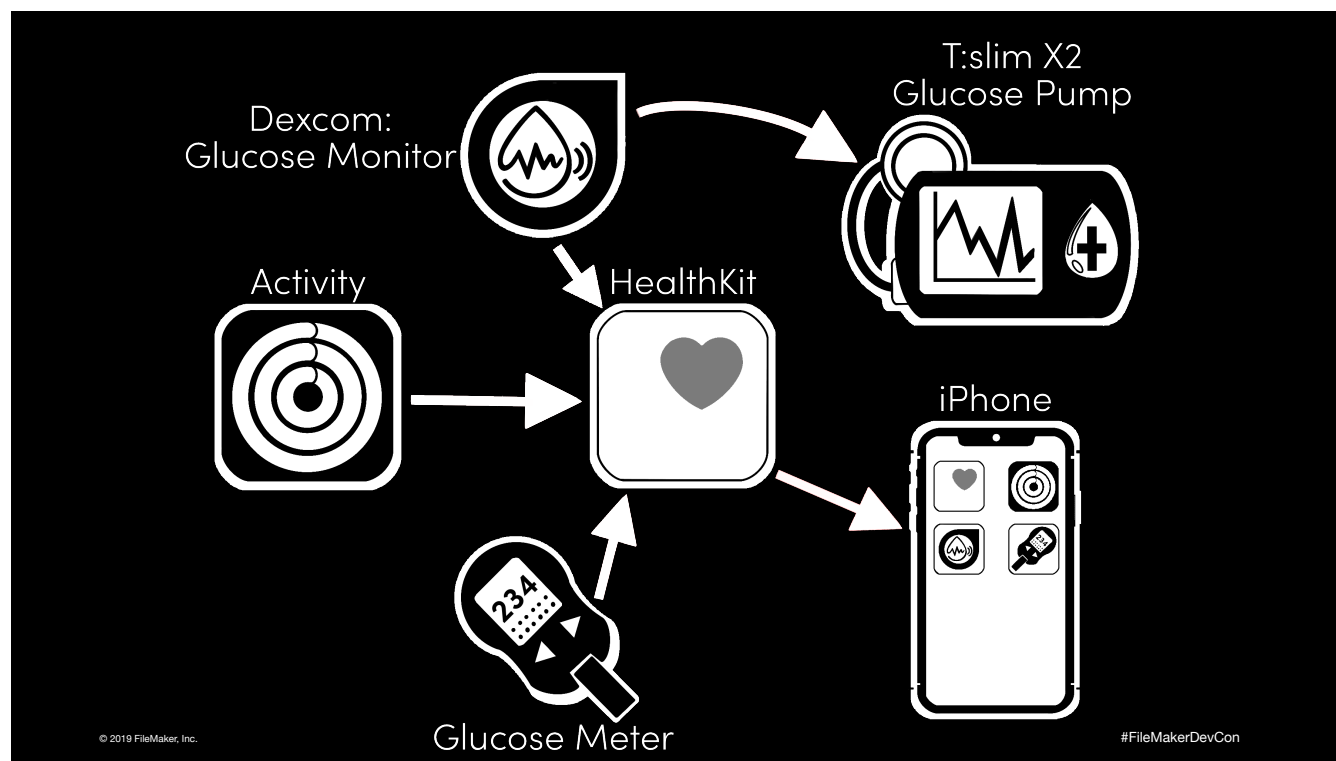
So how am I accomplishing this? For starters most every 17 year old has a cell phone – Randy has an iPhone. Lets start with the Health App. Conveniently they all write data to the Apple Health app. For example Randy wears his Dexcom. It speaks via bluetooth to the Dexcom app on his phone, the app writes the data in to the Health app. In turn I can query the health app and pull not only his Dexcom data but other data points as well.
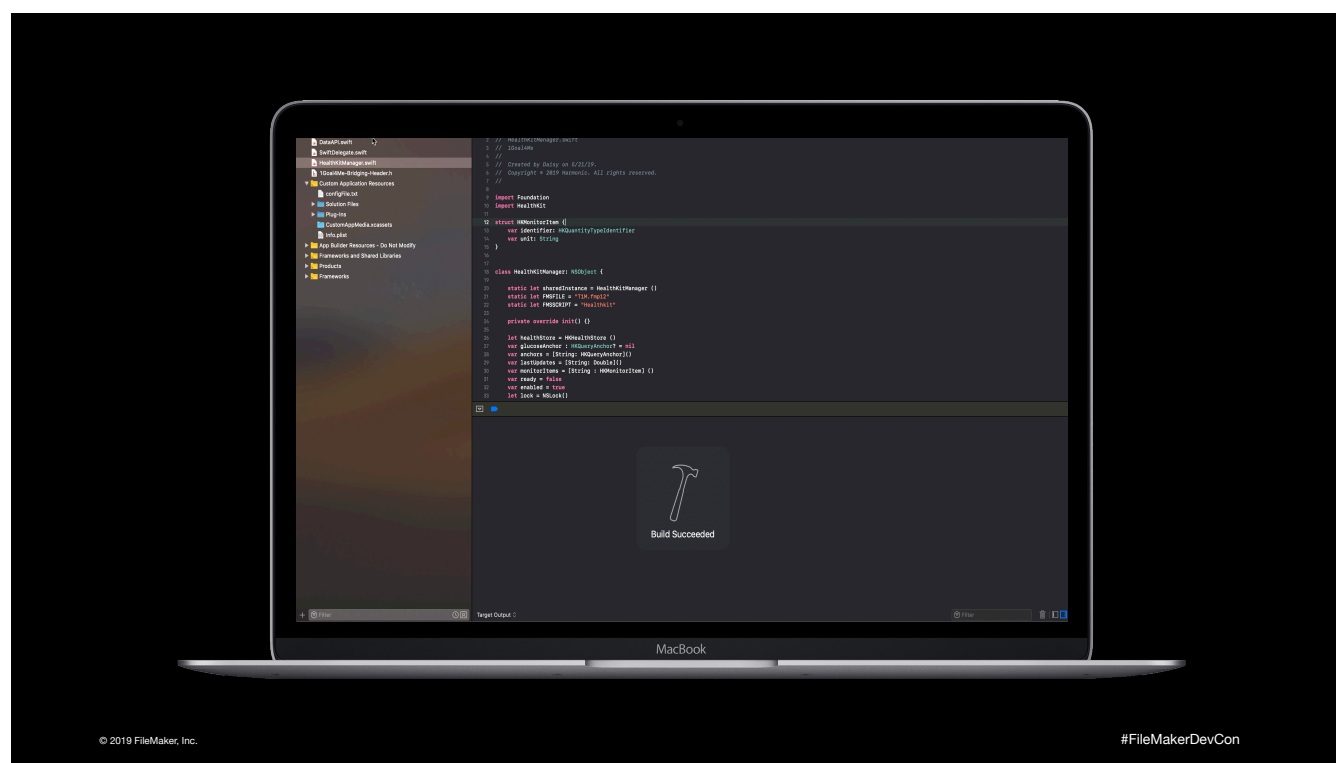
Let's look a step deeper into how we do this. Currently with v1 of this app I have a file hosted on Filemaker server, I am using Xcode and the Filemaker SDK – with a launcher file bundled which is local on his phone. My team was able to write some scripts in swift which runs threads behind the scenes of the app , it takes the data from the objects we care about in the health app and send that data via the data api into Filemaker. If instance we are querying Health App via the HealthkitManager script to give us all the data from the Glucose object that is newer than the last timestamp we have passed in from FileMaker. We have a script step that passes the data back to FileMaker via the data api with the data points as parameters.

Now that we have the data in our centralized location where we have control. The possibilities are endless as to what we do.
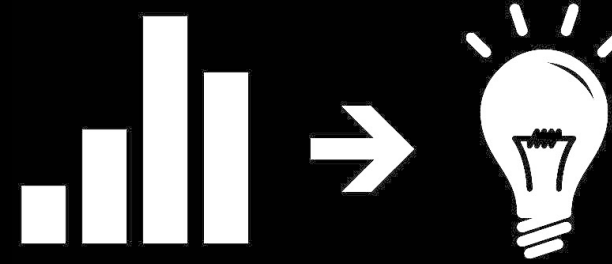
So what are the benefits of this app verses all the other apps out there?
Most other App just do one thing. With 1Goal4Me, we are able to use Filemaker to integrate with many different services, today it's the Health App, Tomorrow could be the individualized devices.
We are pulling 10 different data points from the health app. Ranging from glucose, insulin delivery, heart rate, to activity and more. Once we have all those different data points we can compare them.
How does diet and exercise effect the amount of insulin he needs to take, versus If he had a stressful week, a bad night.
How will that effect Randy the next day. Everything our body does has some sort of cause and effect on glucose levels.
We can see trends, such as every day Randy's blood sugar is spiking during the night – what should I do about this?
Lastly we can see his individual goals. Is he controlling his sugar as best as possible? No– what can he do to fix that, did those changes help or worsen. We are implementing a custom algorithm using the powerful calc engine
in Filemaker. To help analysis and help make the recommended insulin and carb adjustments.
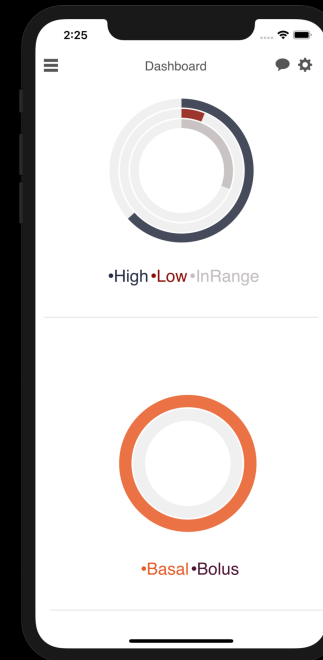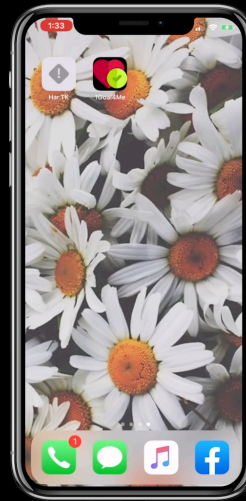
My solution to the Problem is the app 1Goal4Me

Now let's look at a quick demo of the app.

1Goal4Me

Let's open the app

allow app to use our keychain

Turn on all categories

Allow

We can click the different color circles and they tell us the % of high, lows, and in range in the top graph
and the basal and bolus percentages

Lets go to our profile

Click the CGM Report

this is a Candle stick chart of Glucose data ruled up by day

Rotate phone to take a closer look.

Now lets drill down into that data.
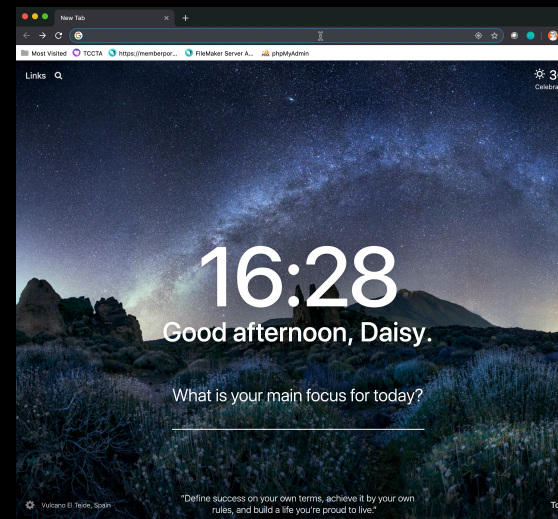we need to go to the menu
select glucose
we can scroll through and see the different entries for glucose, wit the same color coding of high/low/urgent low.

We have a view like this for each data type we are bringing in.

let's close the app. This concludes this session.

Join the Journey

You can follow our journey and see more in-depth videos at har.fm/daisy

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As mentioned before this version of the app is just the starting point of what we can do. Our plans for this app is to evolve and have it go on a journey with us. With the ever changing technology and advances the Type 1 community has. My hope is this is just the beginning to what we can achieve.

You can get more info at har.fm/daisy and click the Get Email updates link and fill out the form.

Events

We will be hosting a live session lead by Steve Sykora and special guests discussing the blood sugar challenge on August 16th 11am CDT. If you cannot attend in person, please join us for the live webinar version of the event at https://attendee.gotowebinar.com/register/2071173543630618637

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Pleas Join us if you are the in Dallas area on site. If you cannot attend in person, please join us for the live webinar version of the event

Session Updates

This session WILL have updates.

www.filemaker.com/devcon/speaker_updates

(This is also listed in DevCon2Go)

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This session will have updates please make sure you check them out when posted

Thank You!

Please remember to fill out the session evaluation at:
www.filemaker.com/devcon/evaluations

Please make sure you remember to fill out the session evaluation.