SLIDE1 Peter at Princeton around 1979 with a cmb anisotropy balloon package using three different microwave frequencies to search for the dipole and smaller anisotropies. Note the musical horns used as low side lobe beam formers in the differential radiometers. The people in the picture from left to right: Ed Cheng, Peter, David Wilkinson. There was a considerable exchange of people between the Princeton and MIT CMB groups at the time. We were also part of COBE together. In fact Peter did not get his PhD on the CMB measurements. As so often in his life, he wanted to do something different in his next project. Dave Wilkinson was beginning to get interested in the diffuse infra red background experiment and wanted to begin looking at the background in the IR atmospheric window near 2 microns. Peter took this on and began looking for "An Optical and Infrared Search for Massive Halos of Galaxies". Several ApJ papers came out of this at the time he was looking for a post doc.

SLIDE 2 Peter did his post doc at MIT again in a completely new field. I think Wilkinson told him it might be interesting but also told him to be careful to keep his eye on the science but with no guarantee that it would pay off in his post doc time.
He quickly became part of the group building and then operating the 1.5 meter interferometer prototype with the argon laser and hanging masses with endless numbers of control loops. He began to specialize in the isolation system and then into understanding the thermal noise. The top two slides show him on one of our fall hikes into the White mountains. In the bottom left he is working with one of the undergrads on making a control amplifier work. The two pictures bottom right are of David Shoemaker before he left to work on the interferometer at Garching.

SLIDE 3 The first graduate students we ever had the courage to put into a PhD program on the gravitational wave detector. The department was not willing at the time to give a PhD in pure technology so we ran the instrument as a detector of gravitational waves. Dan Dewey searched for GW pulses and Jeff Livas for CW signals. We shut the street down over a weekend and gathered enough data to set limits at strain of about 10^{-14} for bursts and 10^{-16} for cw signals above 500 Hz . The people in the picture bottom right : Front: Steve Meyer, Peter, Back: Dan Dewey, Jeff Livas and Dick Benford (engineer and technician).

SLIDE 4 Various views of the 1.5 meter prototype

SLIDE 5 The decorative tombstone of Roger Babson in the Tufts University graveyard. We kept thinking that to make a really big enough detector that could really detect something it would cost a good bit and that the Babson Foundation might be able to help with funding.

SLIDE 6 The next step was to actually find out how much it might cost and how one would build a large enough system to detect a plausible astrophysical source of gravitational waves. At about the time Peter joined the group, Rich Isaacson at the NSF had been able to come up with enough support so that we could engage engineering help in industry. The study became "the blue book". The slide shows the title page of the blue book with Peter and Stan's pictures.

SLIDE 7 Is the table of contents of the blue book. Peter was responsible for the sections on the astrophysics, the isolation system and parts of the thermal noise. In the section on astrophysics

Peter stressed the importance of compact binaries as sources . In much of the prior writings, primarily when discussing bar detectors, the emphasis had been on supernova as sources. The blue book emphasized that there had to be two detectors for believable coincidence measurements and looked over the US for possible places where one could build 10km arm detectors. The capital costs were estimated around $80M. The detector was going to use green light from an argon laser and at the time we were still not decided on the optical configuration. The delay line had been successfully operated by the Max Planck group with power recycling and a Fabry Perot cavity system had not yet been recombined optically. The requirements for the vacuum system were known well enough to realize that UHV would be required which set the costs

SLIDE 8 The agenda for the NSF Advisory committee for Physics in December 1983. The meeting was to consider 3 major new initiatives for the physics division: an upgrade of the Cornell synchrotron, a new nuclear physics facility at the University of Illinois at Urbana and the new broad band interferometric gravitational wave detector now a joint project of Caltech and MIT eventually to be called LIGO. Drever and I presented the vision for a pair of large baseline detectors based on the blue book and the laboratory research going on around the world on interferometric detectors. Kip gave the astrophysical and general relativity arguments in separate talks.

SLIDE 9 Gives the committee members. Stan Deser was a key member of the committee and we now know that he was asked to be on the committee by Marcel Bardon at the recommendation of Rich Isaacson.

SLIDE 10 The handwritten recommendation of the committee. Written by Stan Deser. It was one of the most encouraging set of paragraphs ever written and filled all of us with optimism.

SLIDE 11 The typed version of SLIDE 10

SLIDE12 Both Caltech and MIT groups began looking for sites to place the detectors that were nearer to the campuses than the sites in the blue book. We had learned about an over the horizon radar receiving site in Columbia Maine. Peter went to look at it along with the state geologist and saw that there were large almost flat areas in the region around Cherryfield that looked much like the 360 degree open areas in the US west. The map shows the blueberry field in the mid upper right of the satellite picture.

SLIDE 13 Instead of going for the hike in the White Mountains in 1984 (maybe 1985) the lab outing was to have a look at the Cherryfield site. The pictures are: top row left to right, Peter, Dick Benford, the blueberry barrens after picking in the fall, lower Jeff Livas and Dirk Muehlner looking at a map trying to locate the end stations, an artist rendition of the detector in Cherryfield, buried in a cut and fill trench.

SLIDE14 Many years later after the decisions had been made to build in Livingston and Hanford a person who lives in the Cherryfield area and knew about the possibility of building LIGO there

made a myth and story around LIGO being in Cherryfield in spirit. Peter can best explain this story and the sign that now sits in the middle of the field where LIGO was not built.

SLIDE 15 A picture taken by Mike Zucker during an LSC meeting at MIT at the time when the transition in spokesperson from me to Peter was being made. I think we were discussing the transition from autocracy to democracy.

SLIDE 16 The view from a house I have been renting for two weeks in September in Bass Harbor, Mt Desert Island Maine for the past 25 years. Maine as you will see still plays a special role in Peter's and my life.

SLIDE 17 A view of the same place as SLIDE 16 but this time from a kayak in Blue Hill Bay. During many of the years in Maine, Peter and Sarah Saulson have come for an extended weekend to kayak around Mt Desert Island in September.

SLIDE 18 At the Seafood Ketch in Bass Harbor on September 16, 2015 the day after the first signals from a black hole binary coalescence might have been detected. Even with the toast there was still a significant amount of skepticism around the table. Rich Isaacson was scheduled for a visit before the possible discovery and Peter told him about the possibility of the detection on the porch seen in slide 16 and 17. He was the most skeptical of all. Going around the table clockwise : Rebecca (blue sweater) Benjamin, Peter, Sarah, Rich, me, Carla.

SLIDE 19 Same place as slide 18 but exactly one year later Sept 16, 2016. Several more black hole binary coalescences had been detected. A lot less skepticism. Again going around clockwise: Peter, Sarah, Benjamin, Rebecca, Carla, me, Louise Shelley, Rich.

SLIDE 20 Plaque presented to the NSF by the LIGO Scientific Collaboration and Laboratory for the enormous gamble they took on supporting LIGO and the new scientific field the NSF has fostered.

SLIDE 21 Peter's enduring legacy