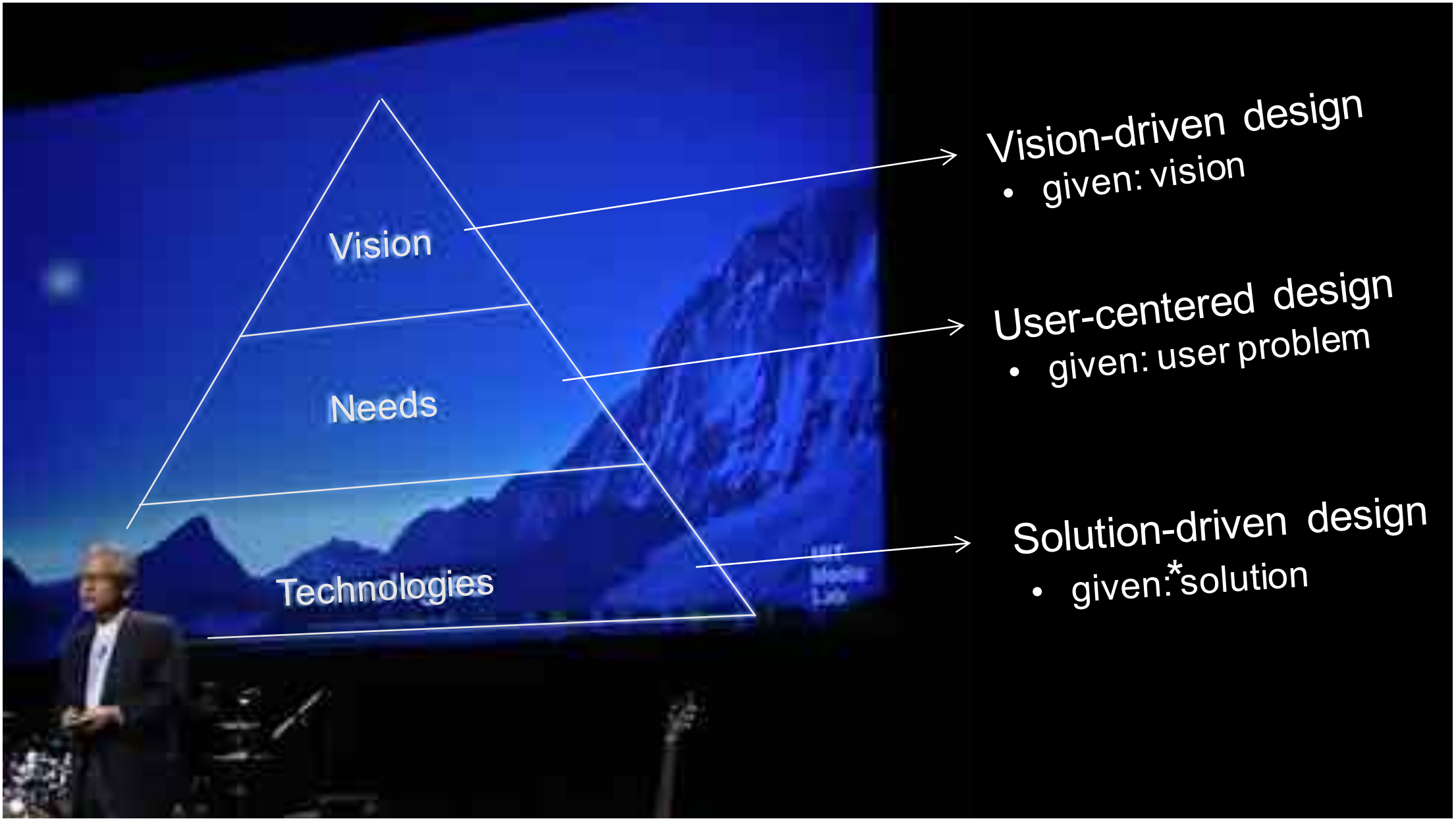
Interaction Design & Virtual Reality

Liwei chan 詹力韋
Assistant Prof.

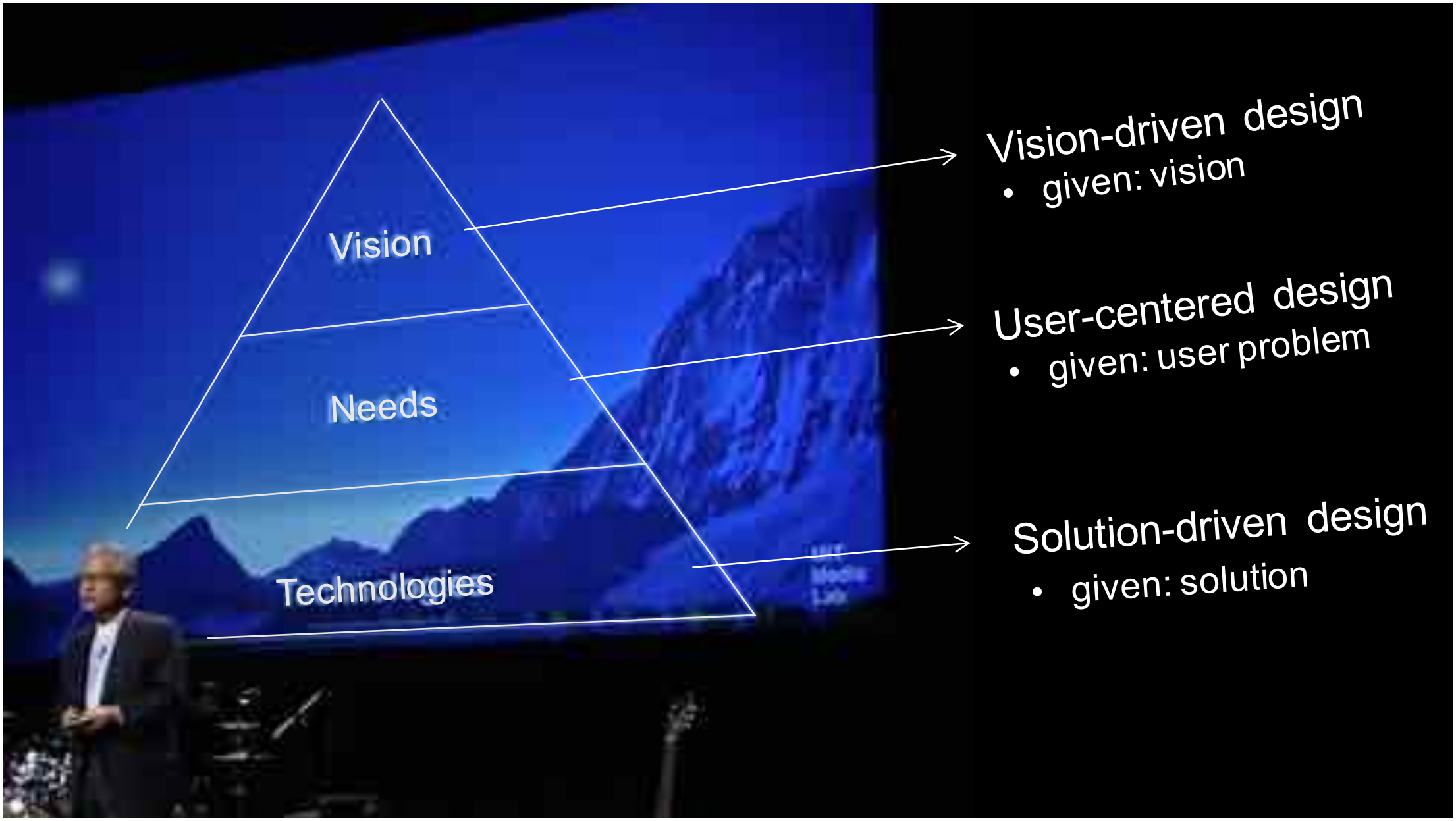
2016.09.30


Vision
Needs
Technologies
Vision-driven design
• given: vision
User-centered design
• given: user problem
Solution-driven design
• given: *solution


Vision-driven design
User-centered design
Solution-driven design


LineFORM
Actuated Curve Interfaces for Display, Interaction, and Constraints
Ken Nakagaki, Sean Follmer, Hiroshi Ishii
mit media lab
tangible media

LineFORM: Actuated Curve Interfaces for Display, Interaction, and Constraint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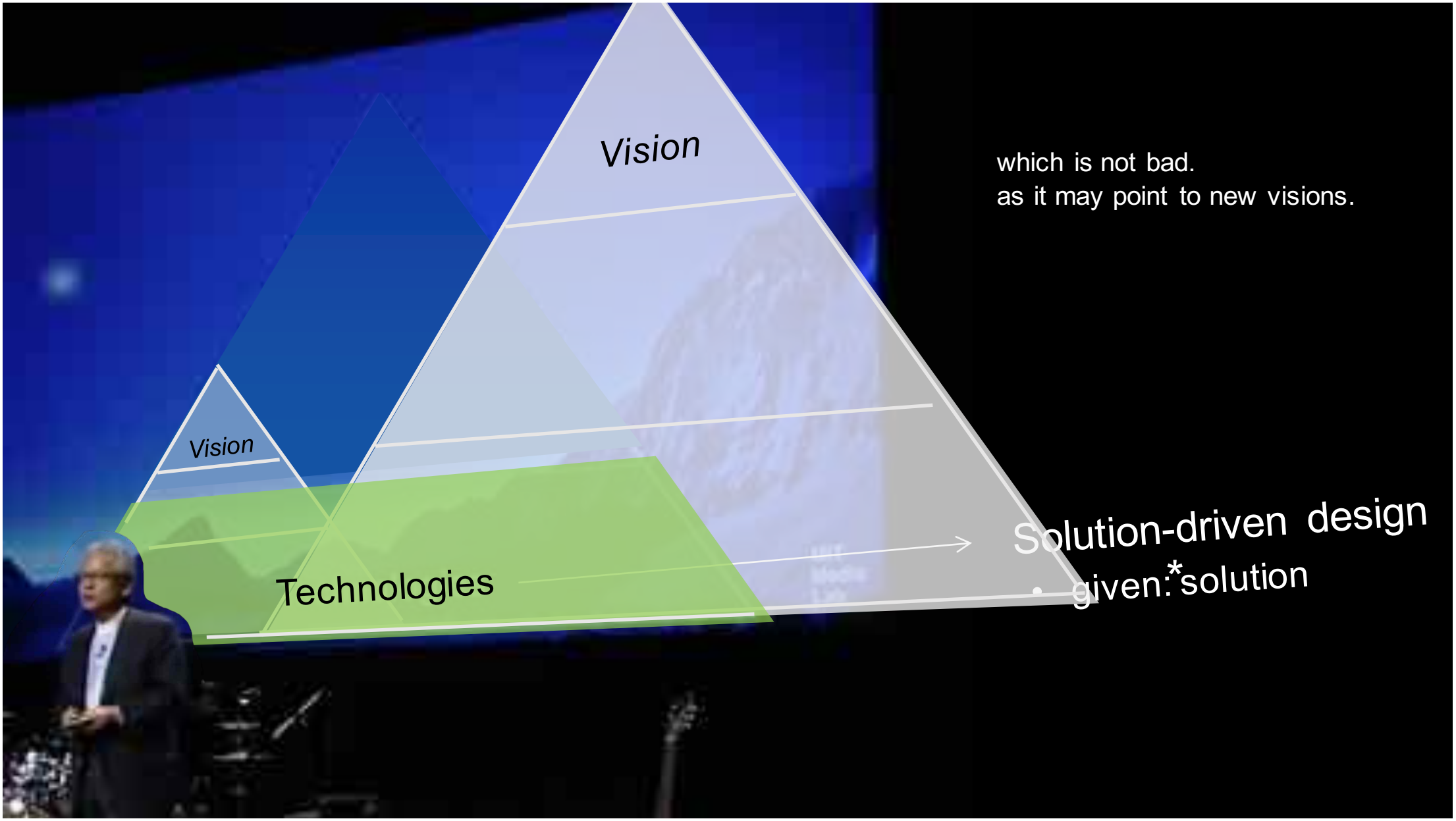

Vision
Vision
Technologies
which is not bad.
as it may point to new visions.
Solution-driven design
given:*solution

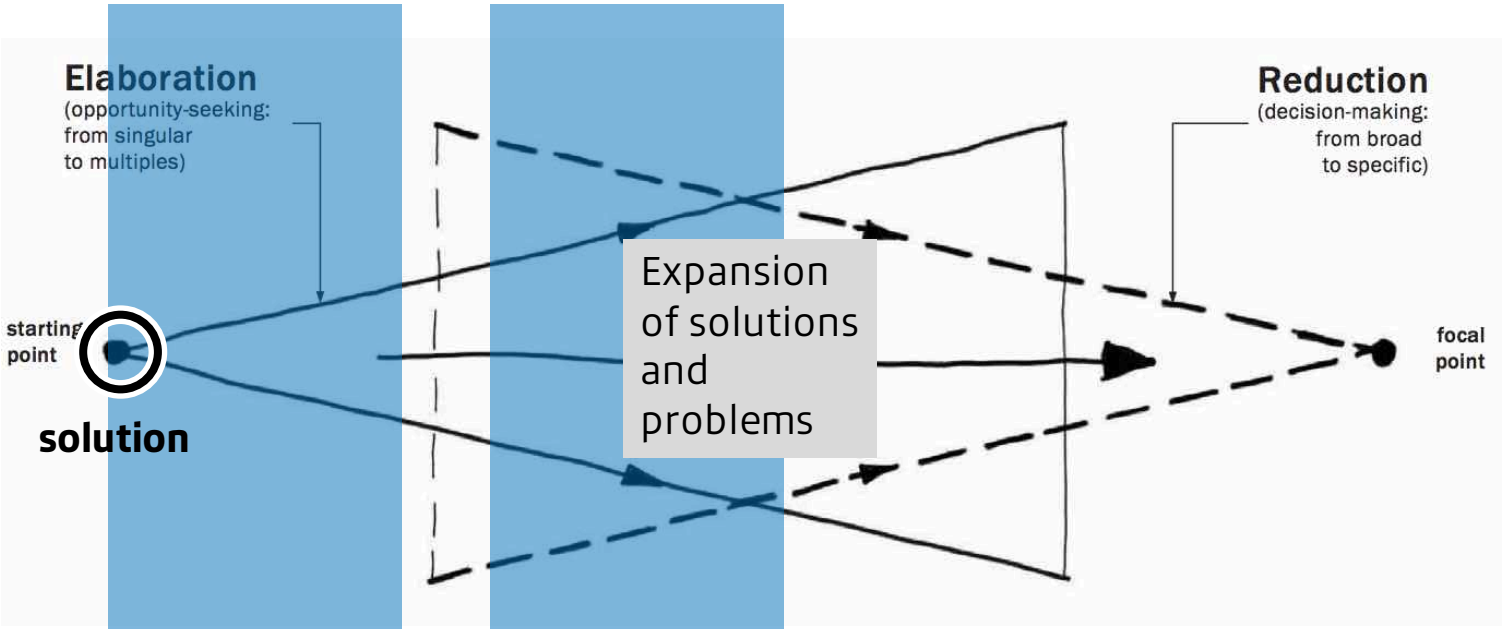
solution-driven design

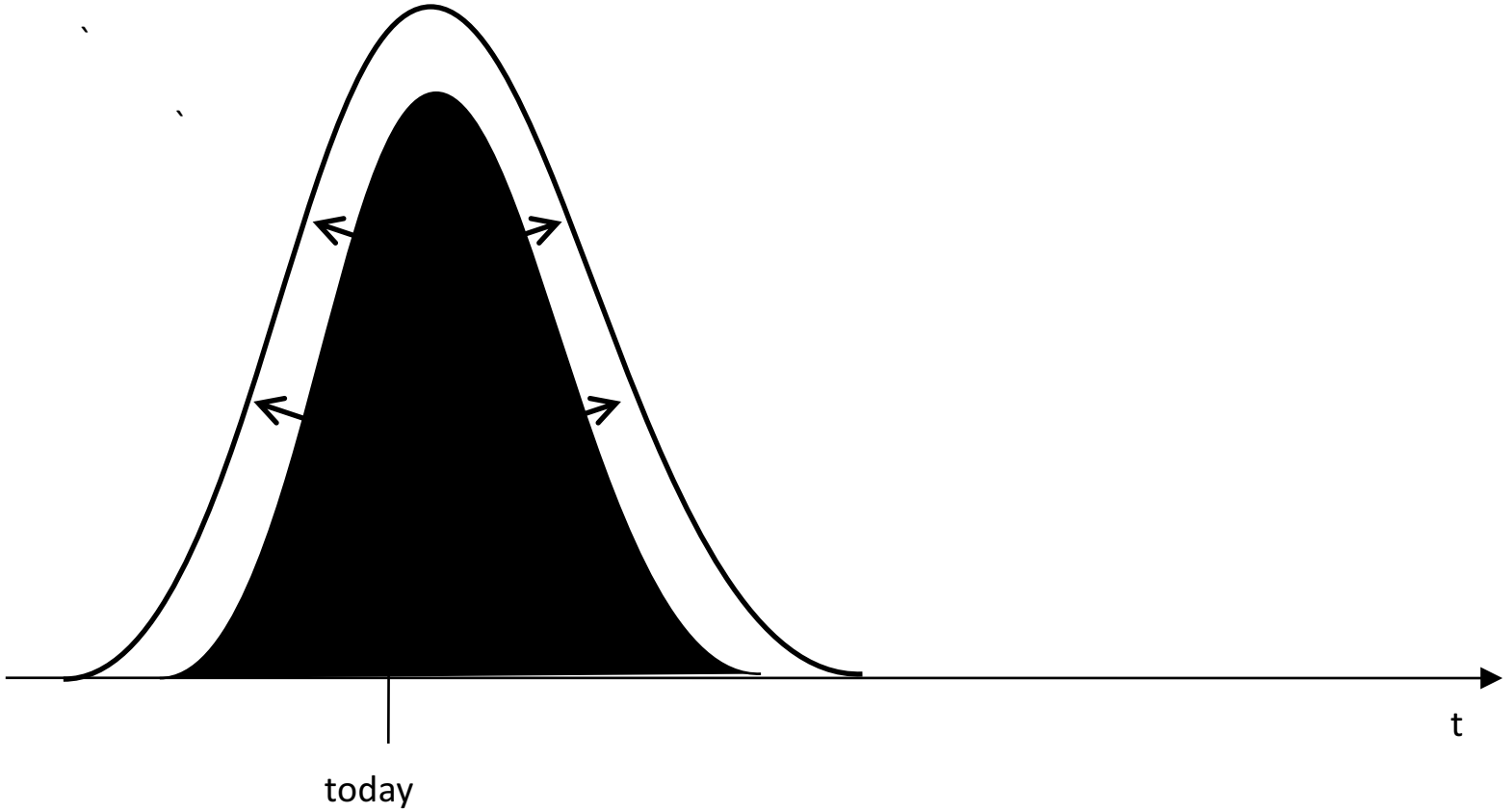
•>>a solution looking for a problem<<

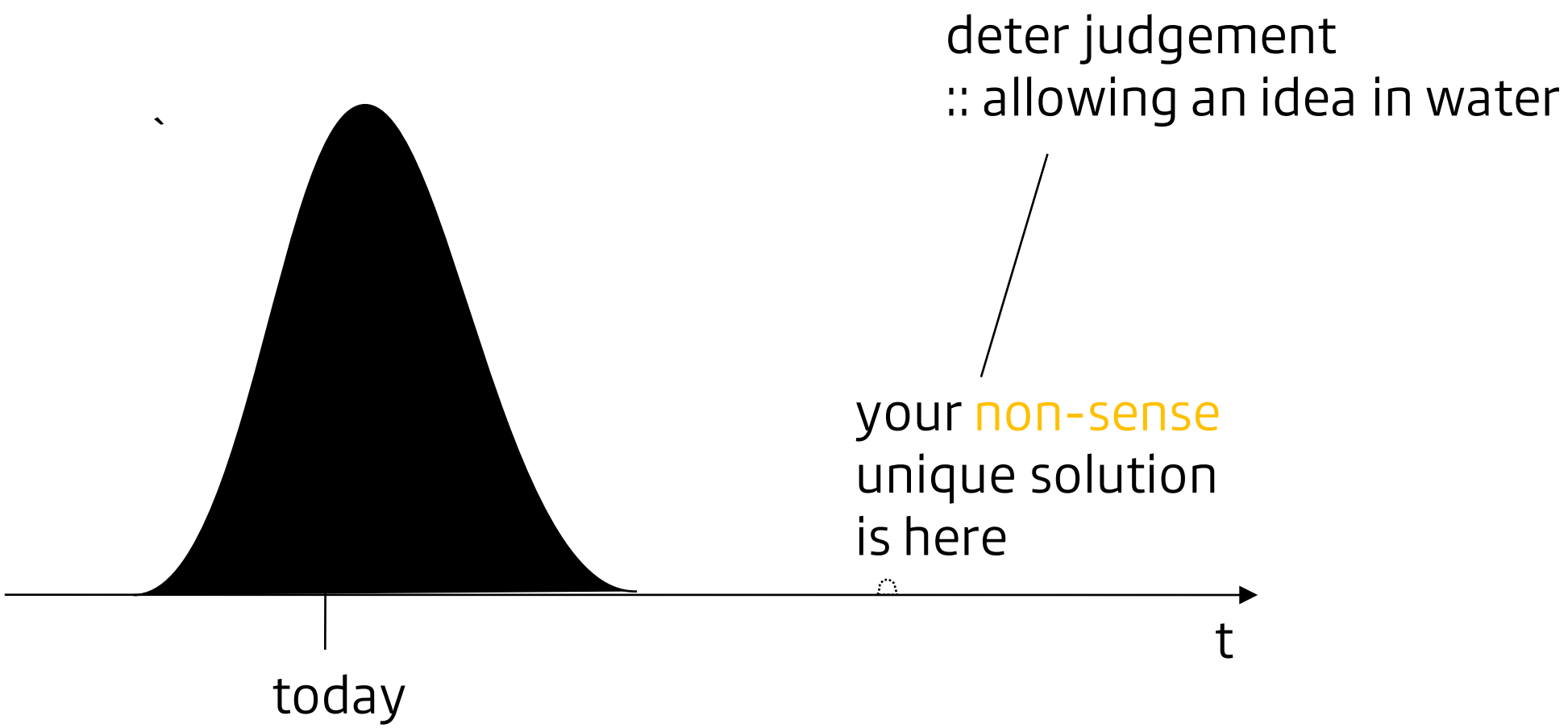
•a practical guide to invention

design process

:= an act of elaboration and reduction of design alternatives for the purpose of optimization




t
today


deter judgement
:: allowing an idea in water
your non-sense
unique solution
is here
t
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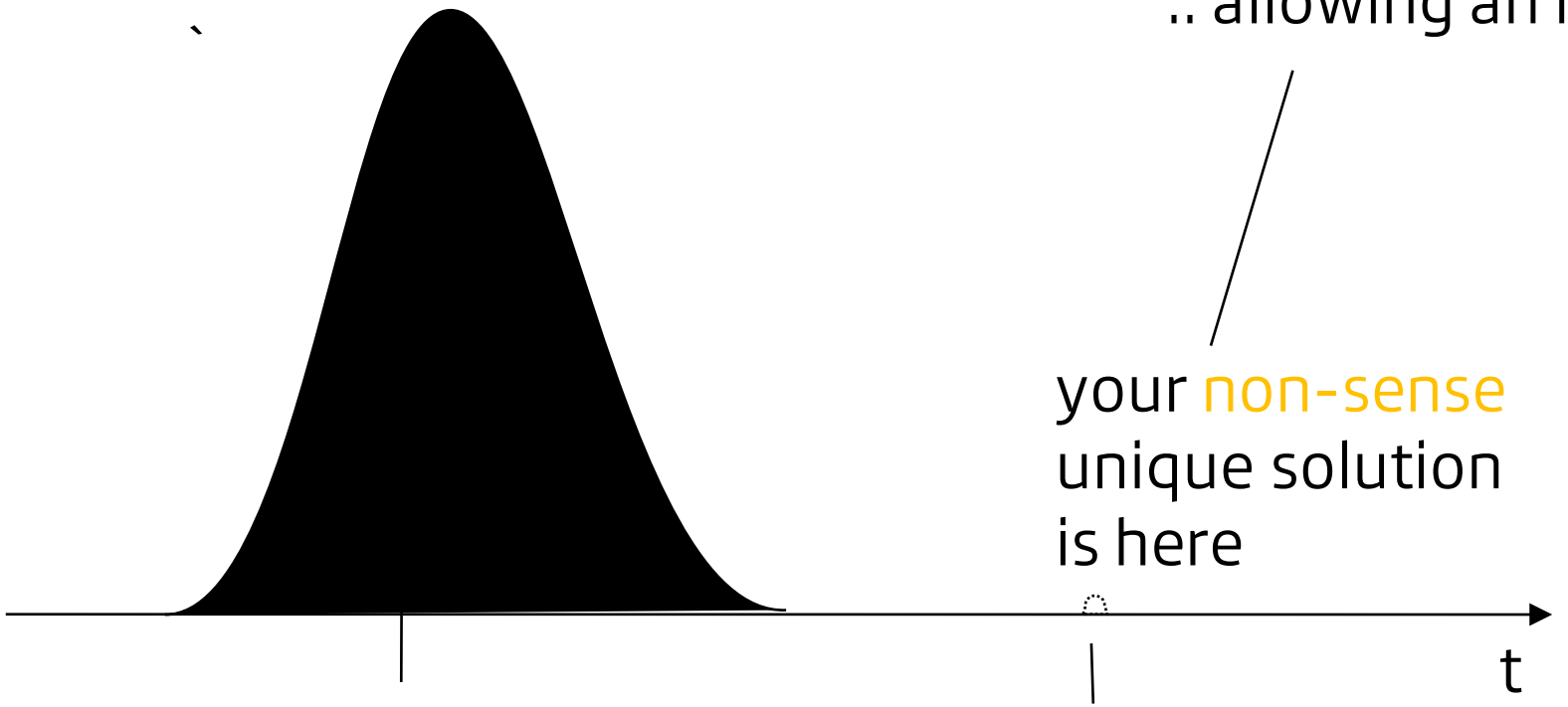
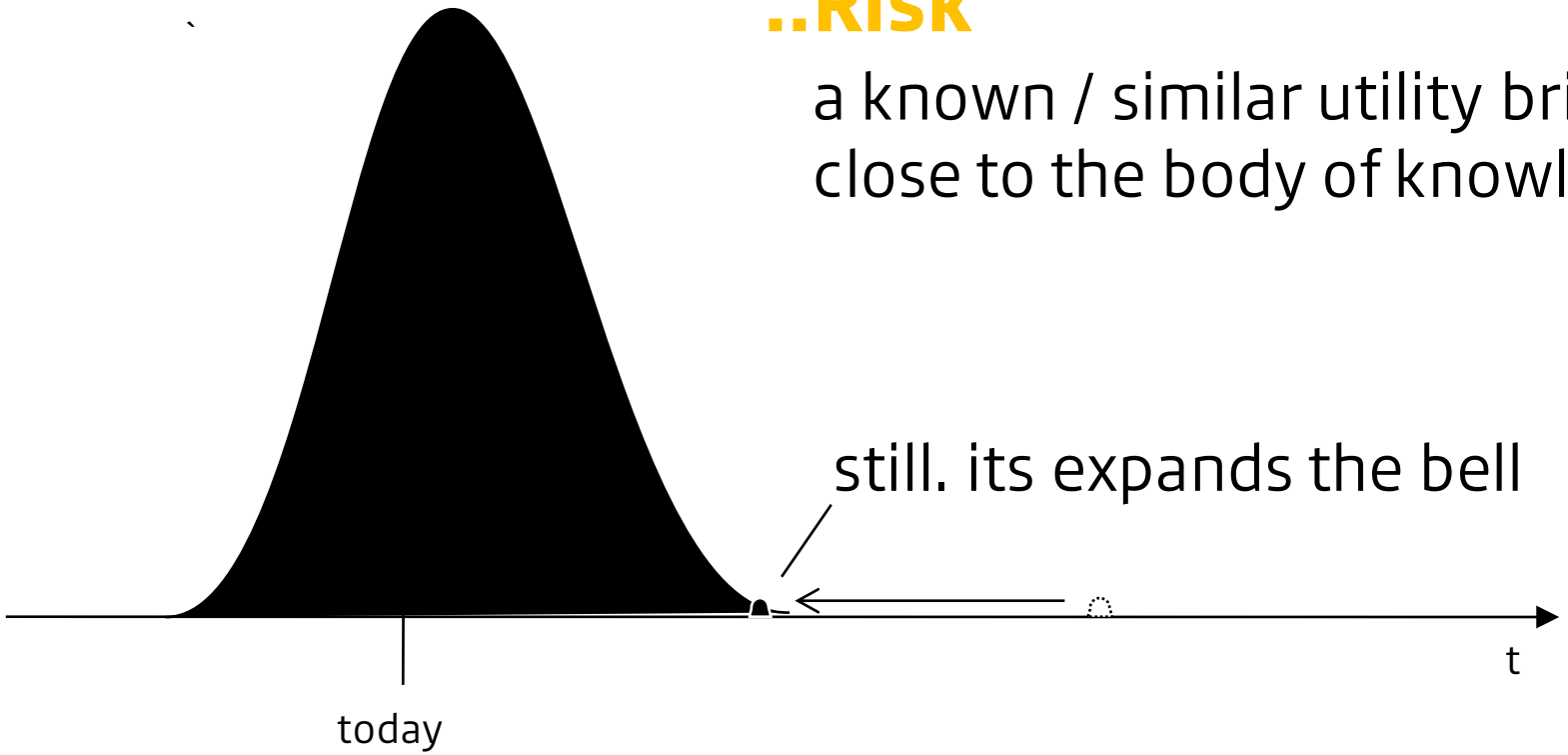

deter judgement
:: allowing an idea in water
your non-sense
unique solution
is here
t
today
it will become solid and positioned
until you figure out how to associate it
with a meaning (e.g., problem / utility)

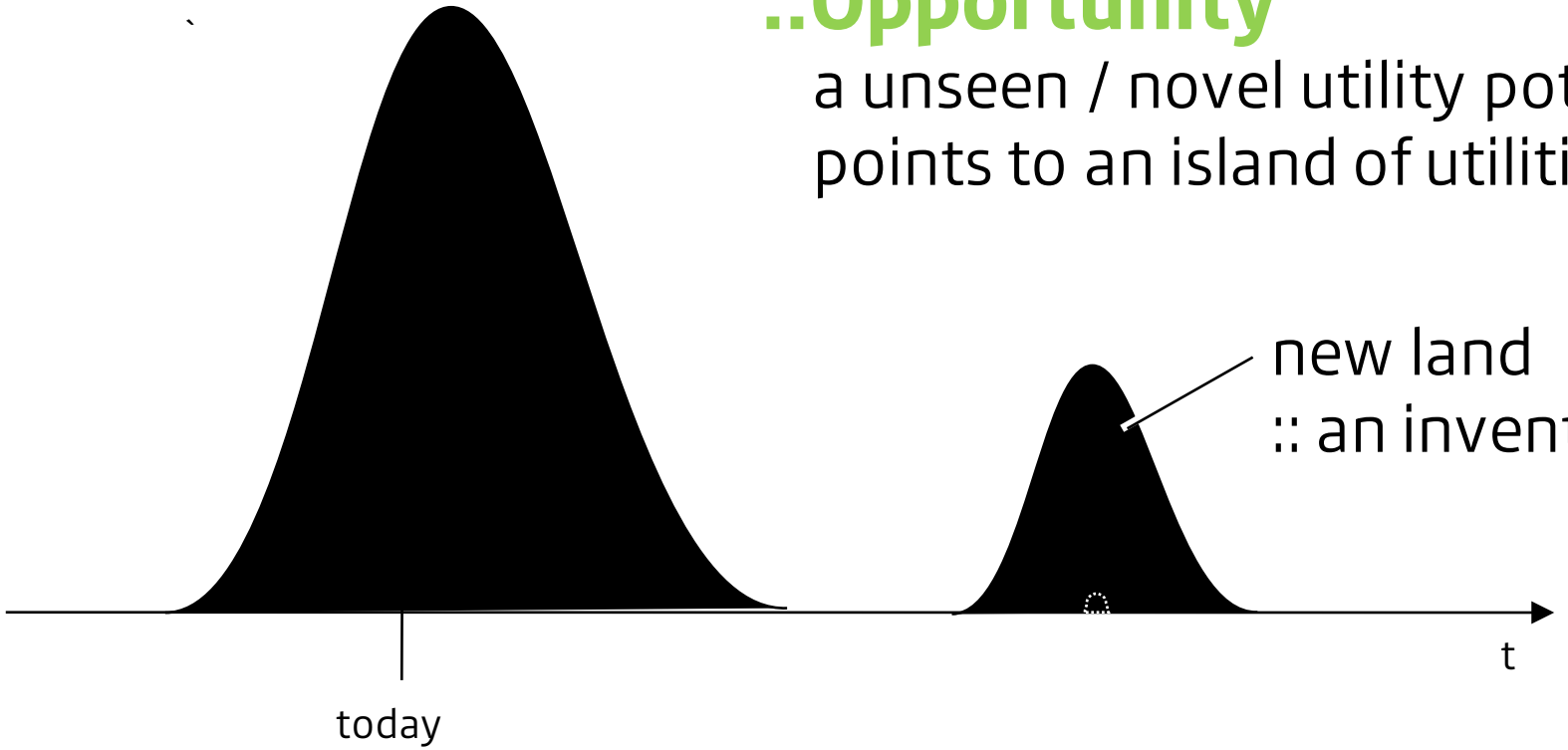
::Risk

a known / similar utility brings it close to the body of knowledge

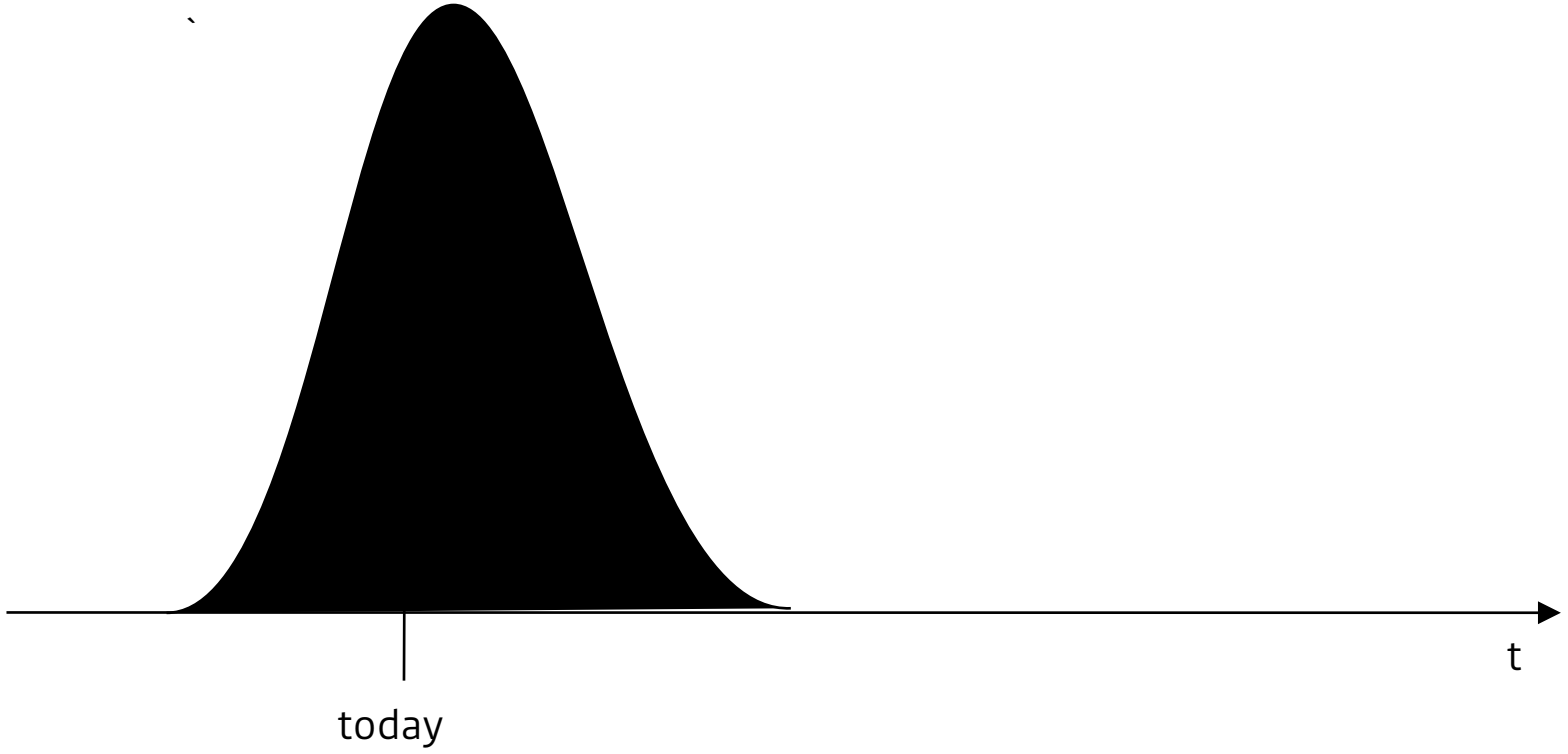


::Opportunity

a unseen / novel utility potentially points to an island of utilities.



how it **really** works?



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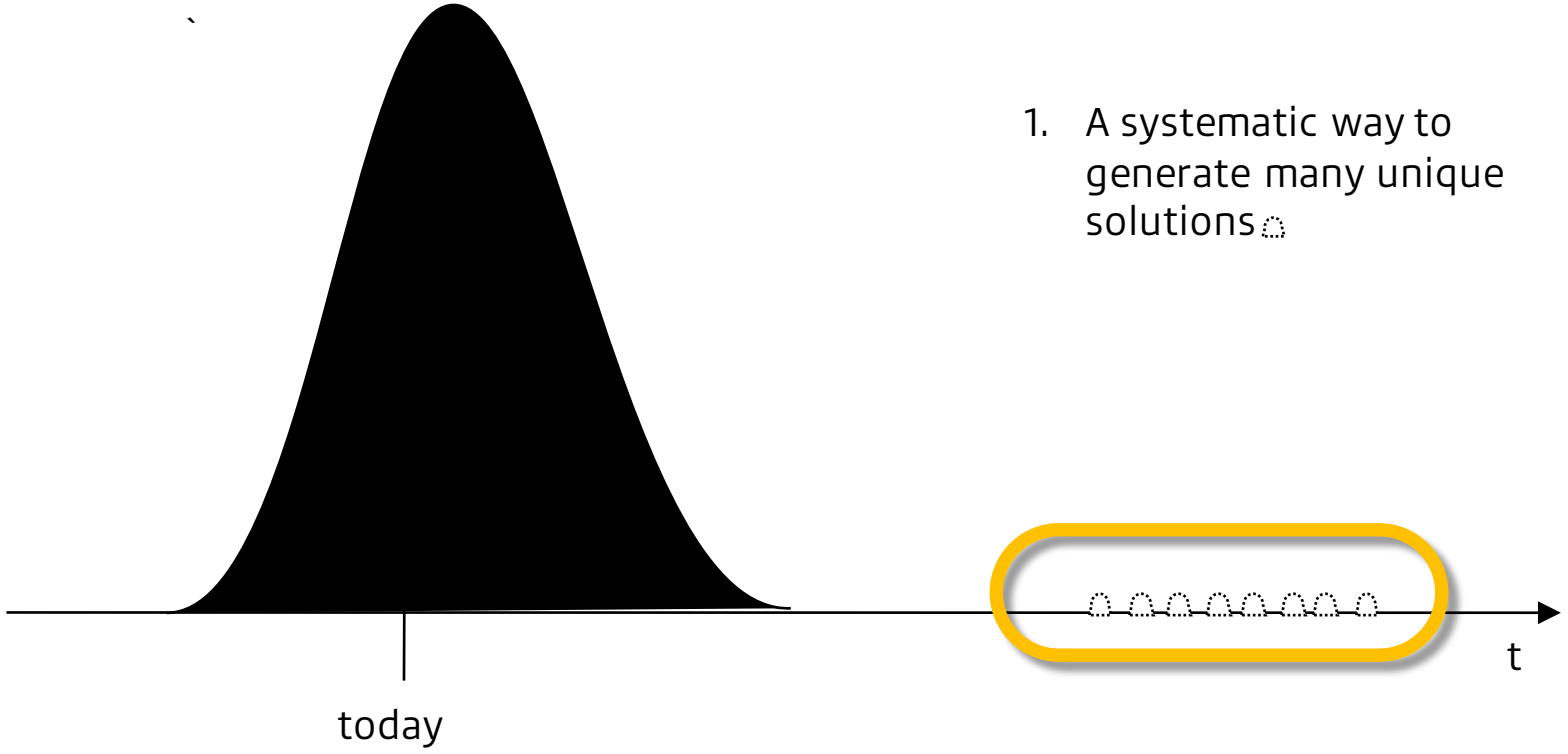
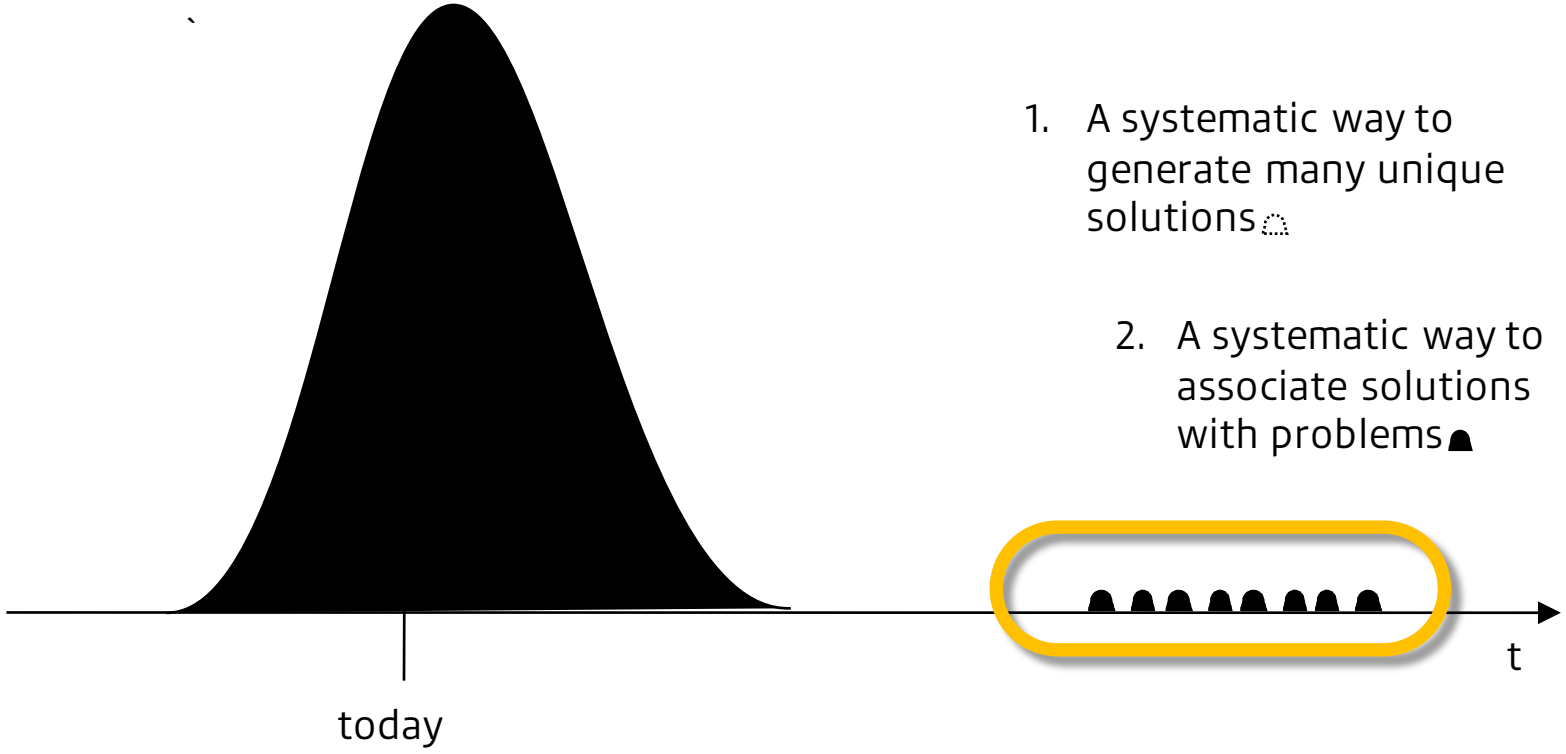


1. A systematic way to generate many unique solutions

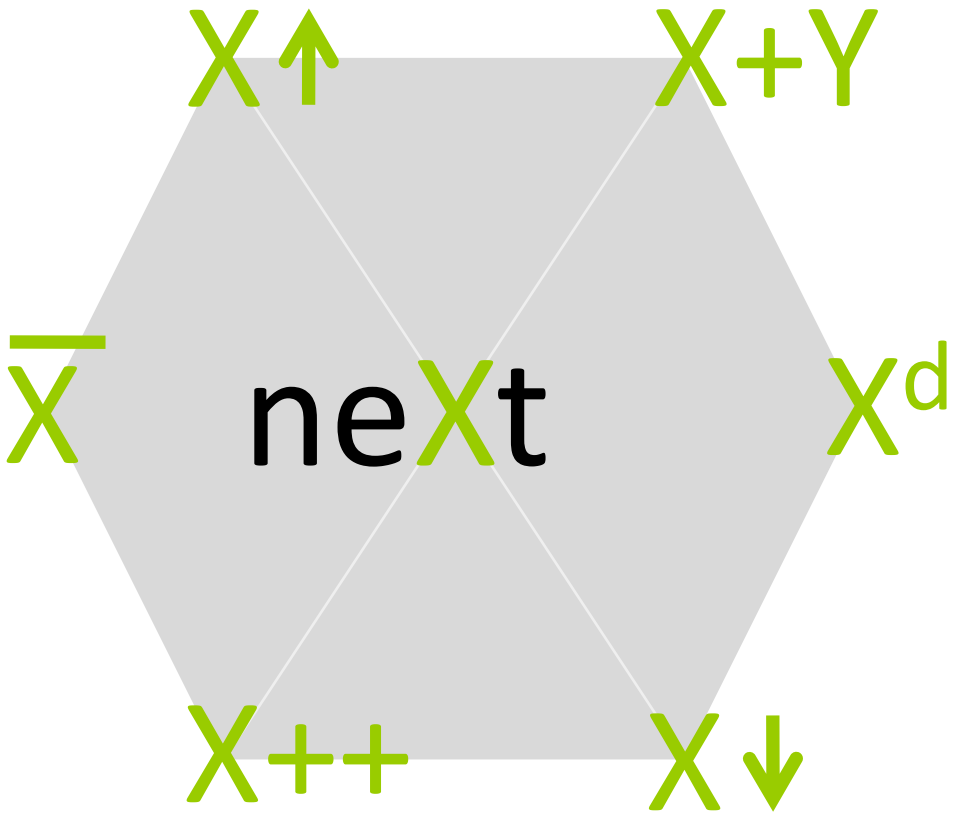
how it **really** works?

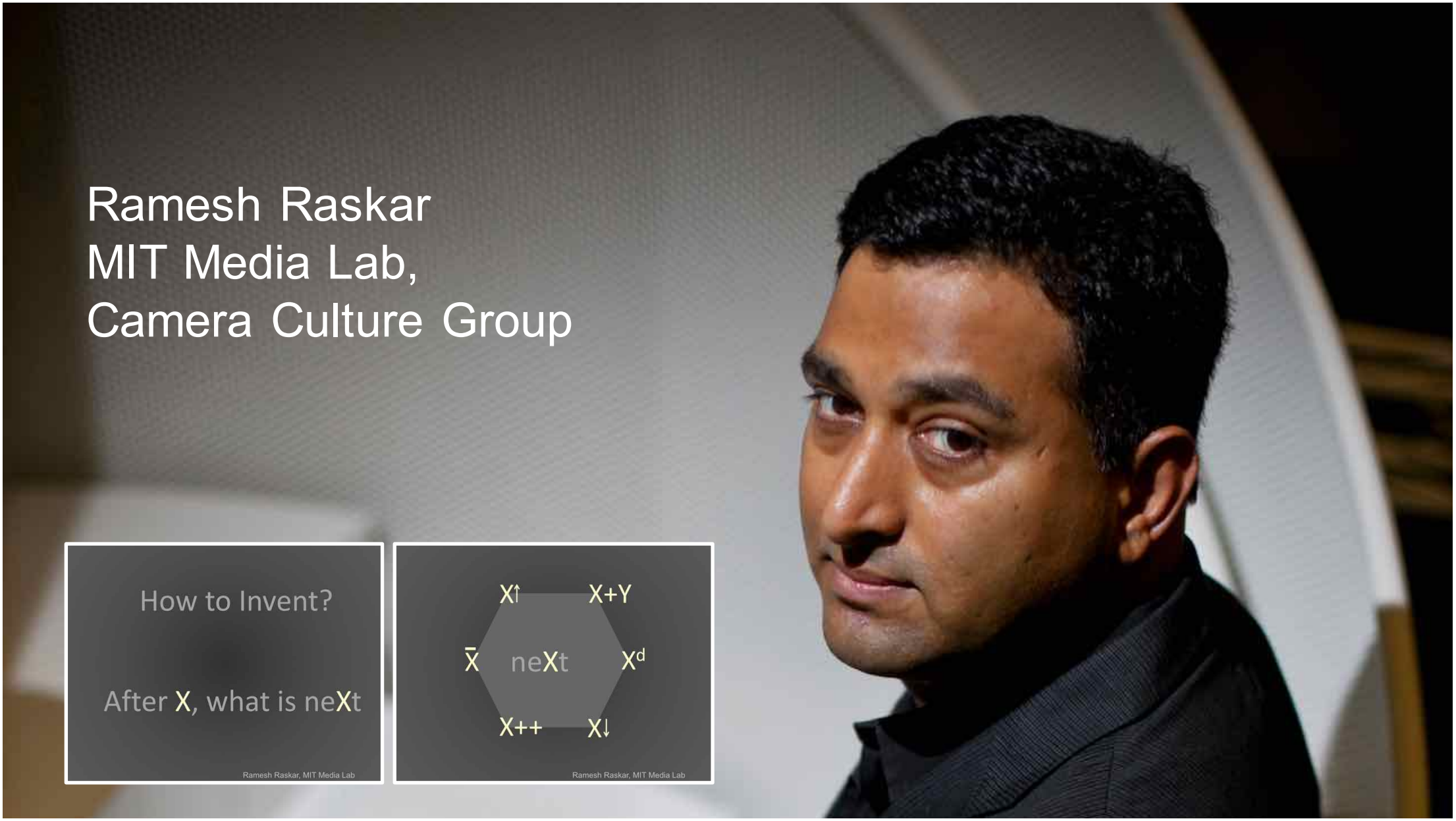


1. A systematic way to generate many unique solutions

2. A systematic way to associate solutions with problems

a systematic way to generate many unique solutions



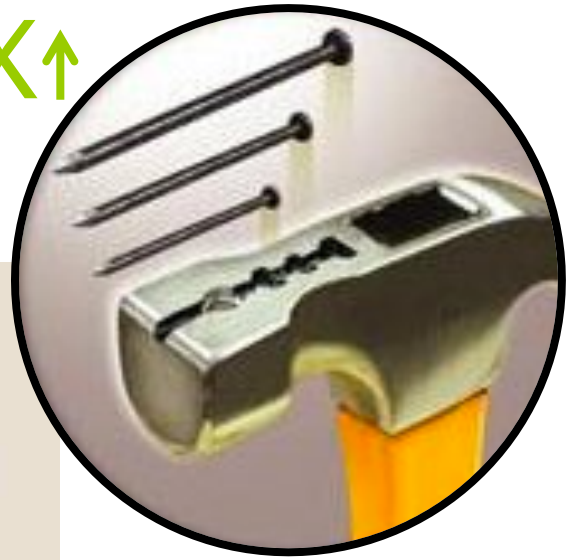

Ramesh Raskar
MIT Media Lab,
Camera Culture Group
How to Invent?
After X, what is neXt
Ramesh Raskar, MIT Media Lab
X↑
X+Y
X̄
neXt
X^d
X++
X↓
Ramesh Raskar, MIT Media Lab


INKtalks.com

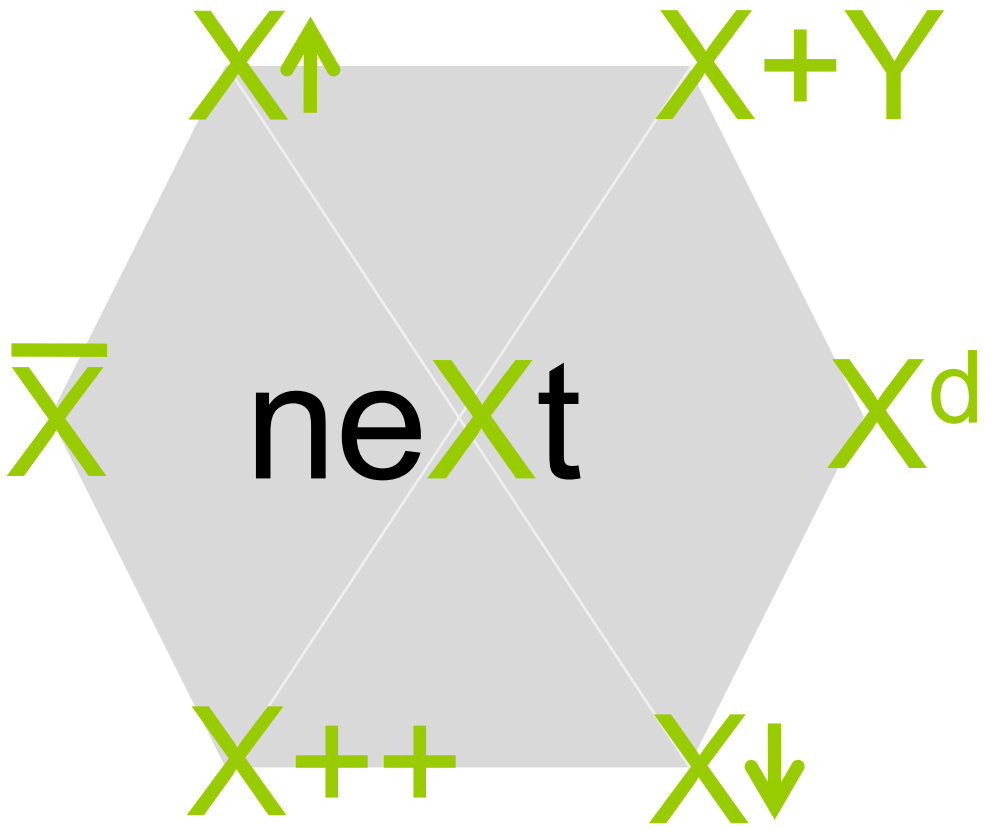
problem

solution


X1
X2
X3
X4
X5
BALL-PEEN HAMMER
MASONRY HAMMER
MALLET
FRAMING HAMMER


X↑


Xd
Keyhole Saw
Coping Saw
Back Saw
Hack Saw

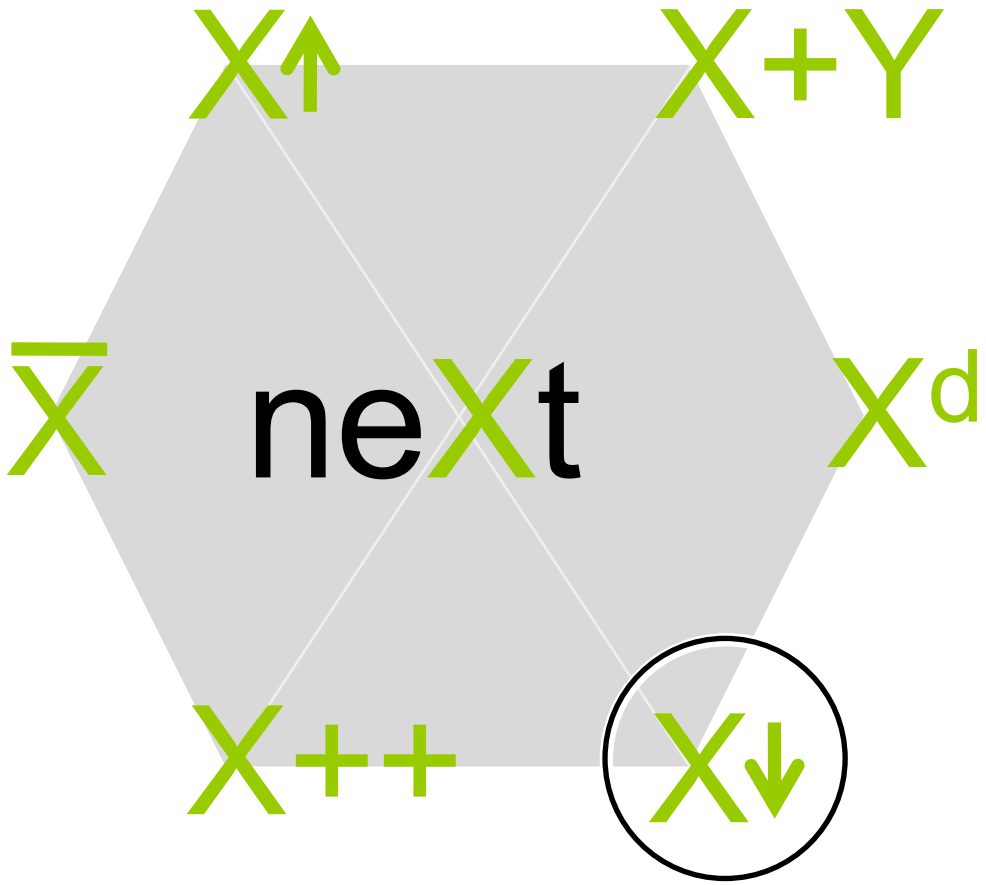

X↑
X+Y
X̄
neXt
Xd
X++
X↓

given a nail,
find all the hammers

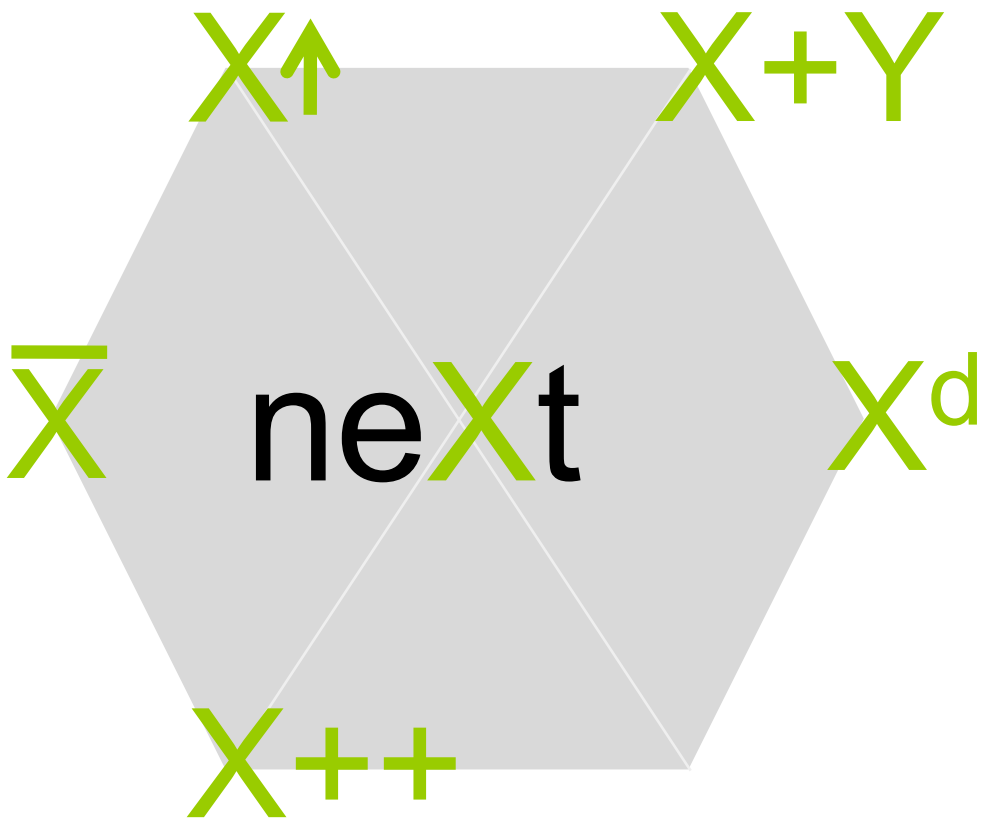
:: given a problem,
find all the solutions

:: user centered design

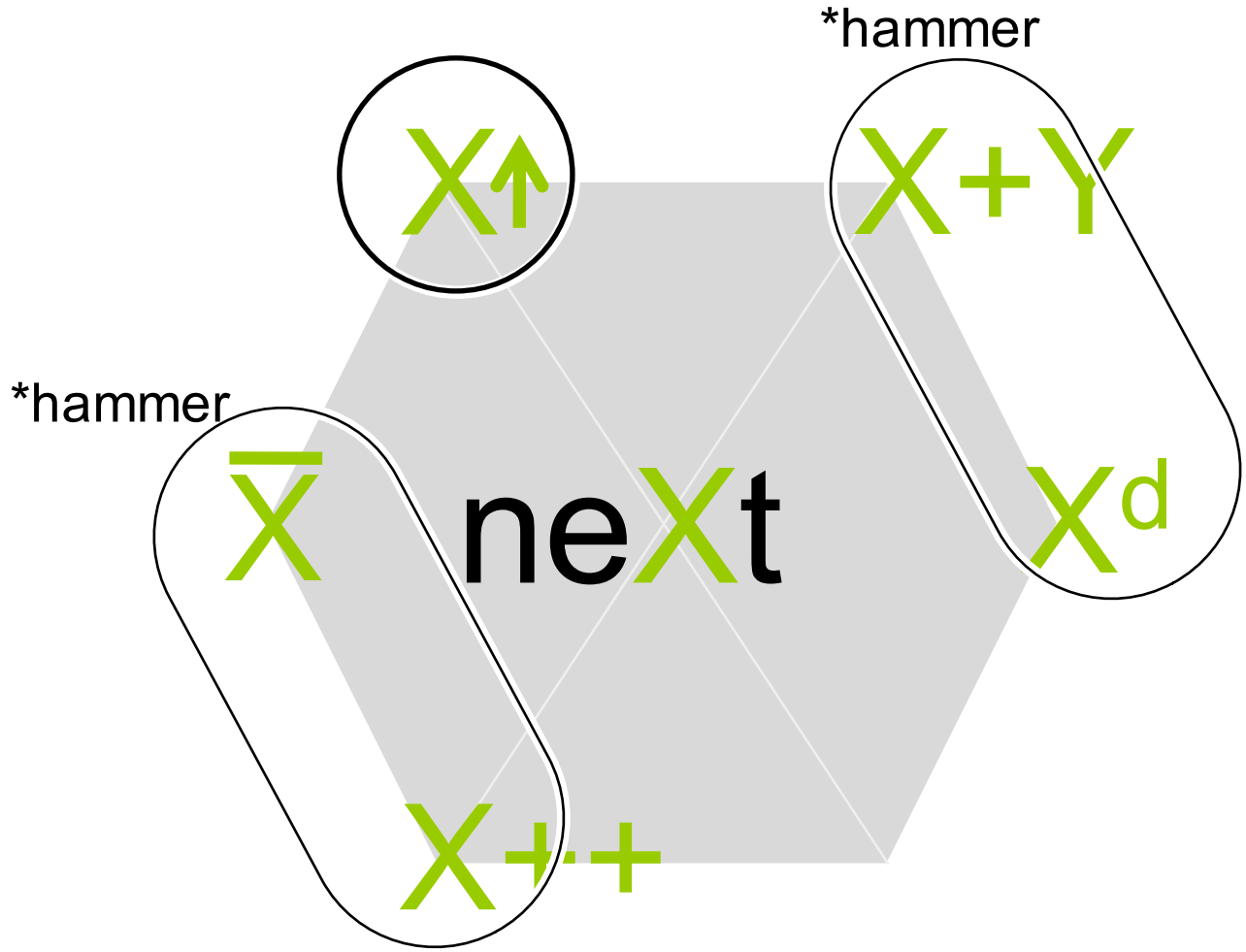
you are expert..
let's skip it.



now, all **X's** here refer to solutions



given a *hammer,
find all the nails



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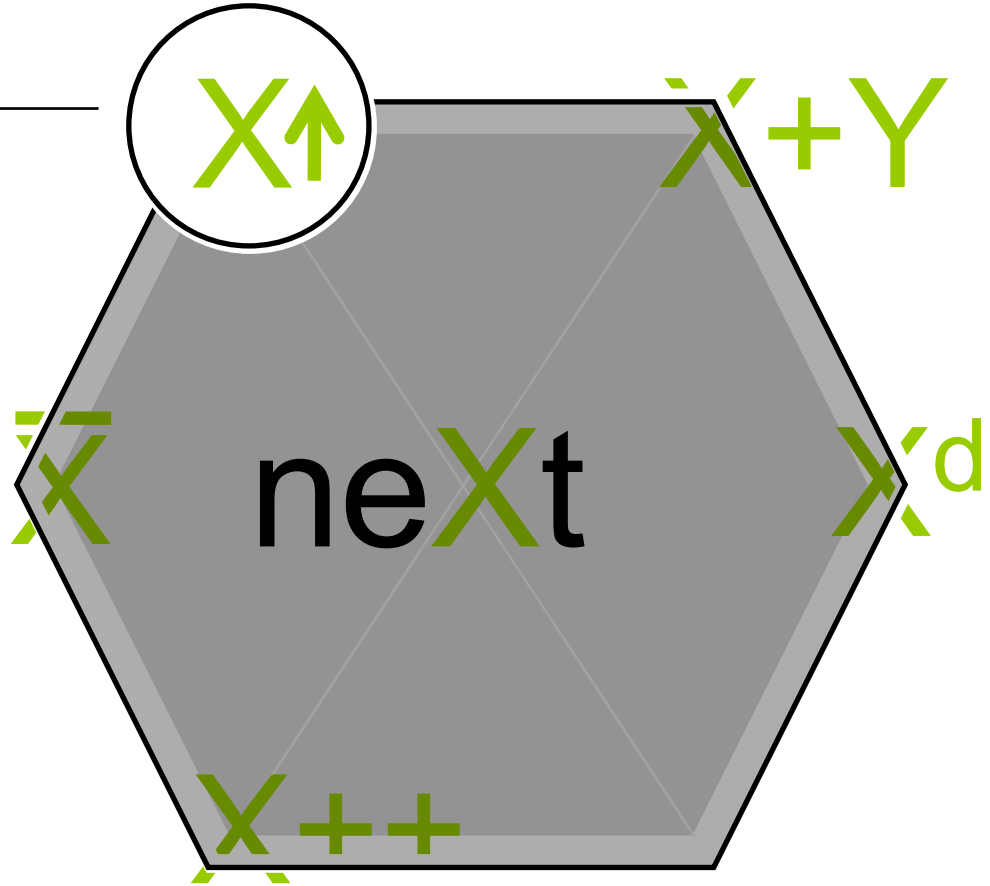
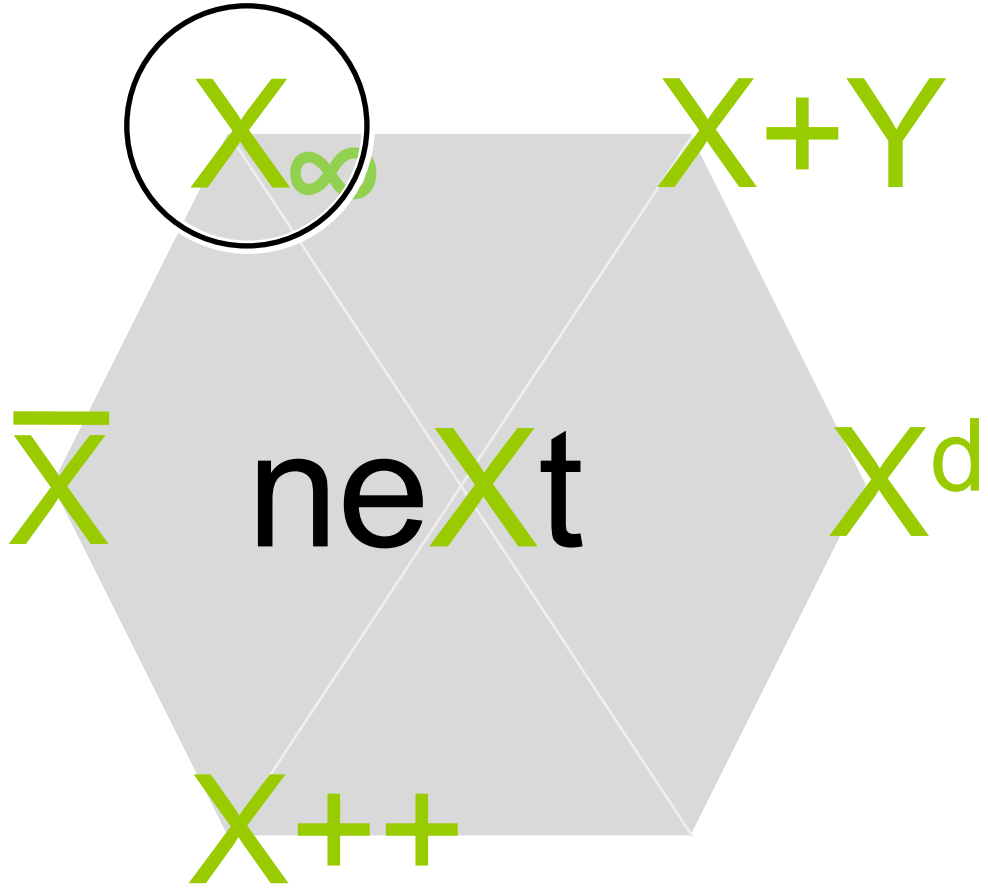


remember the example of X↑ ?
- trillion frames per second.

trick: look at the extremes



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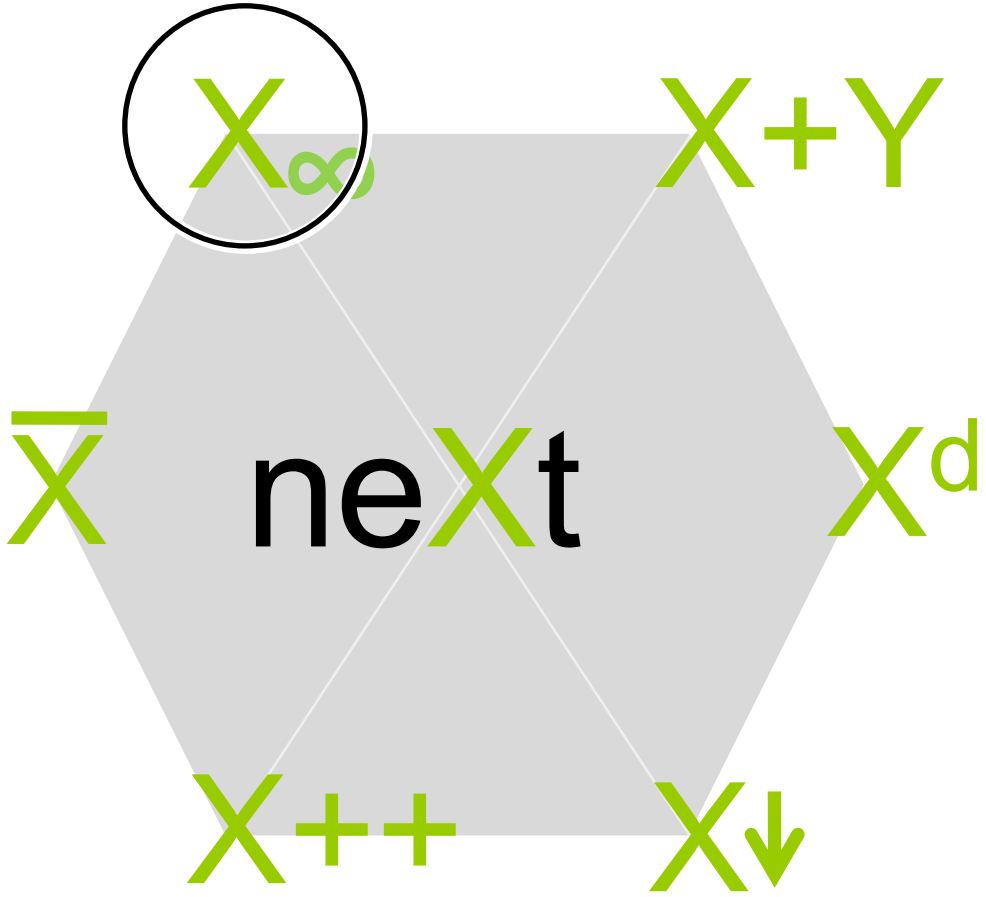
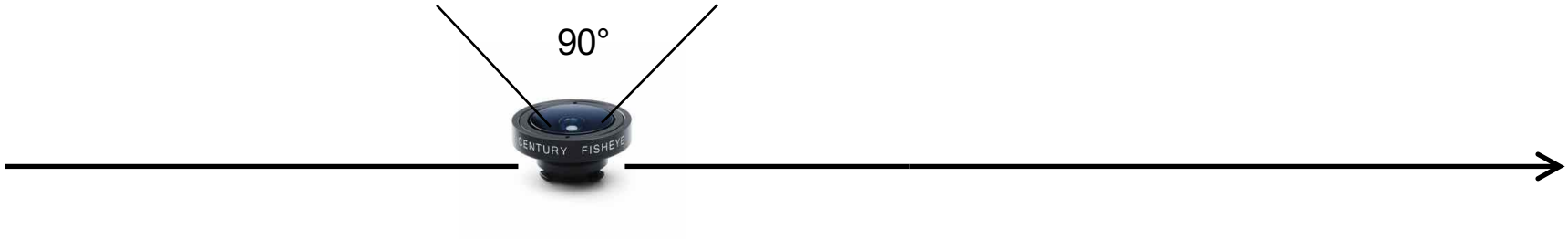
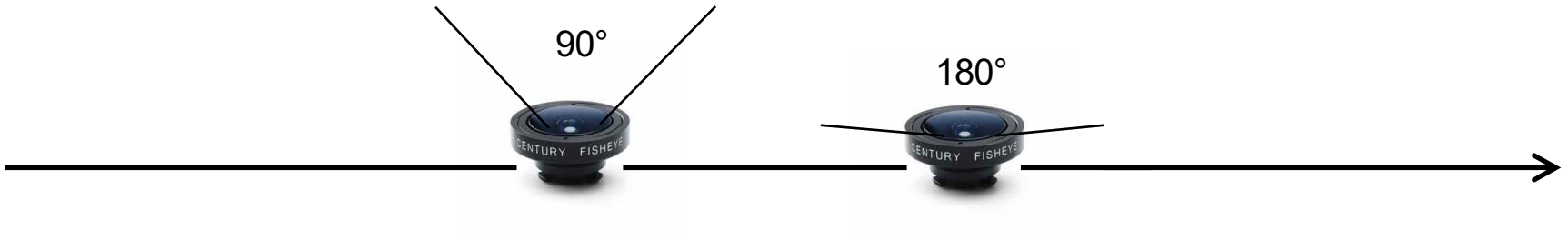
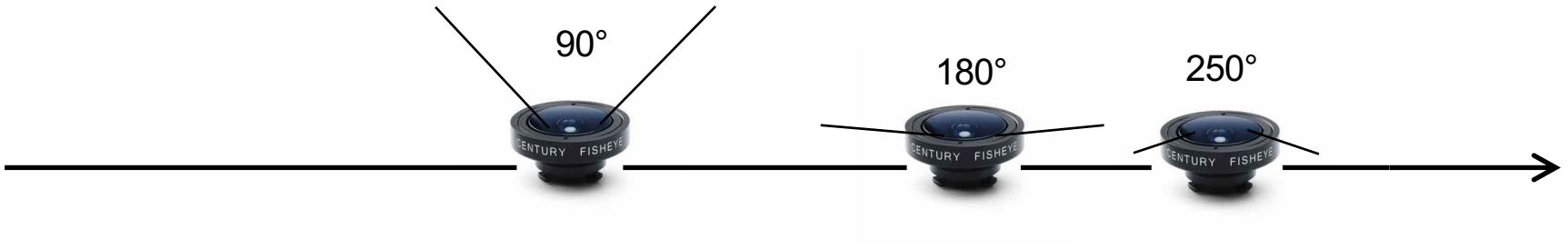



90°
CENTURY FISHEYE


90°
180°
CENTURY FISHEYE
CENTURY FISHEYE


90°
180°
250°
CENTURY FISHEYE
CENTURY FISHEYE
CENTURY FISHEYE

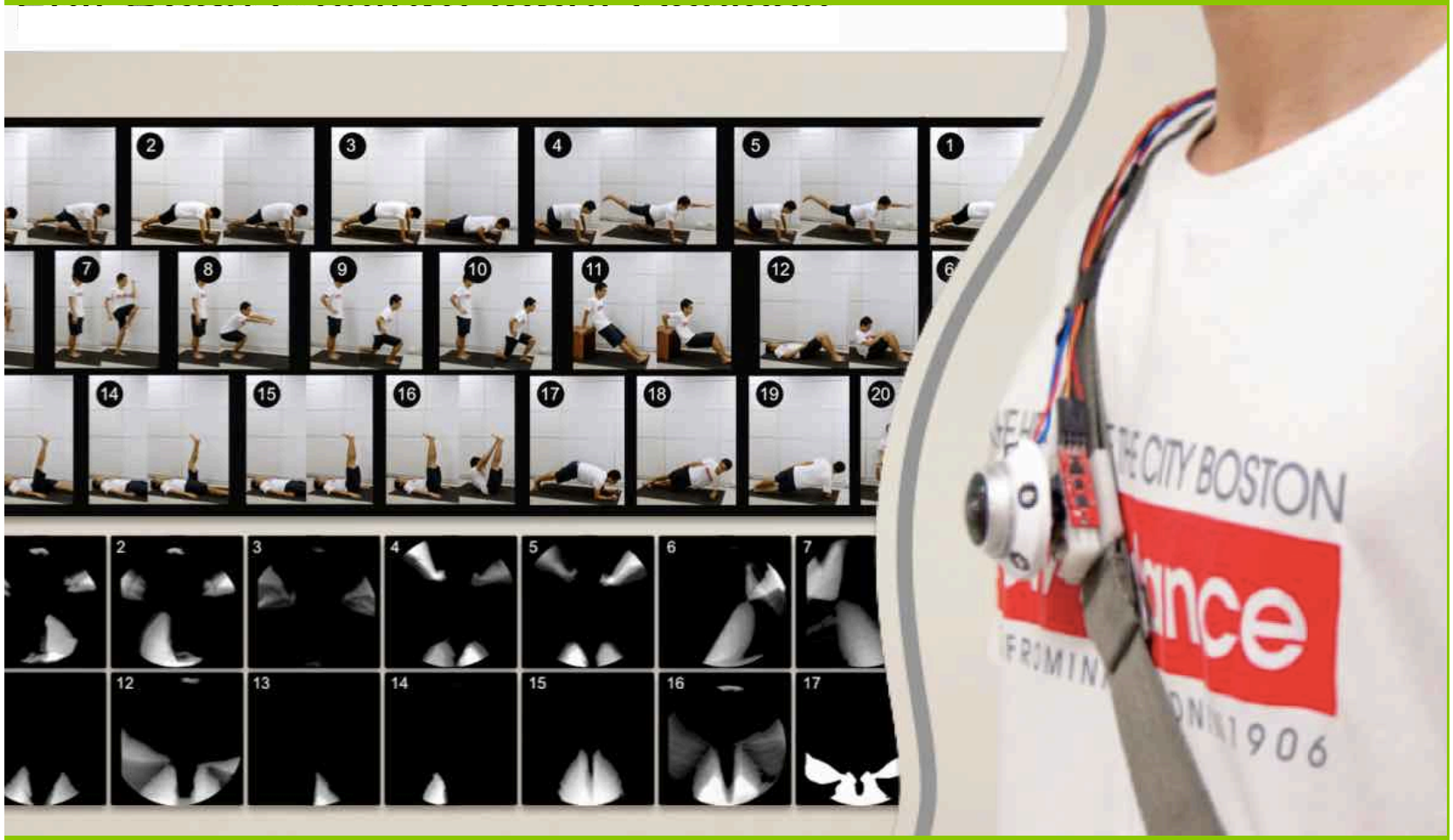
UIST 2013

Surround-See:
Enabling Peripheral Vision on Smartphones during Active Use

Xing-Dong Yang, Khalad Hasan, Neil Bruce, Pourang Irani

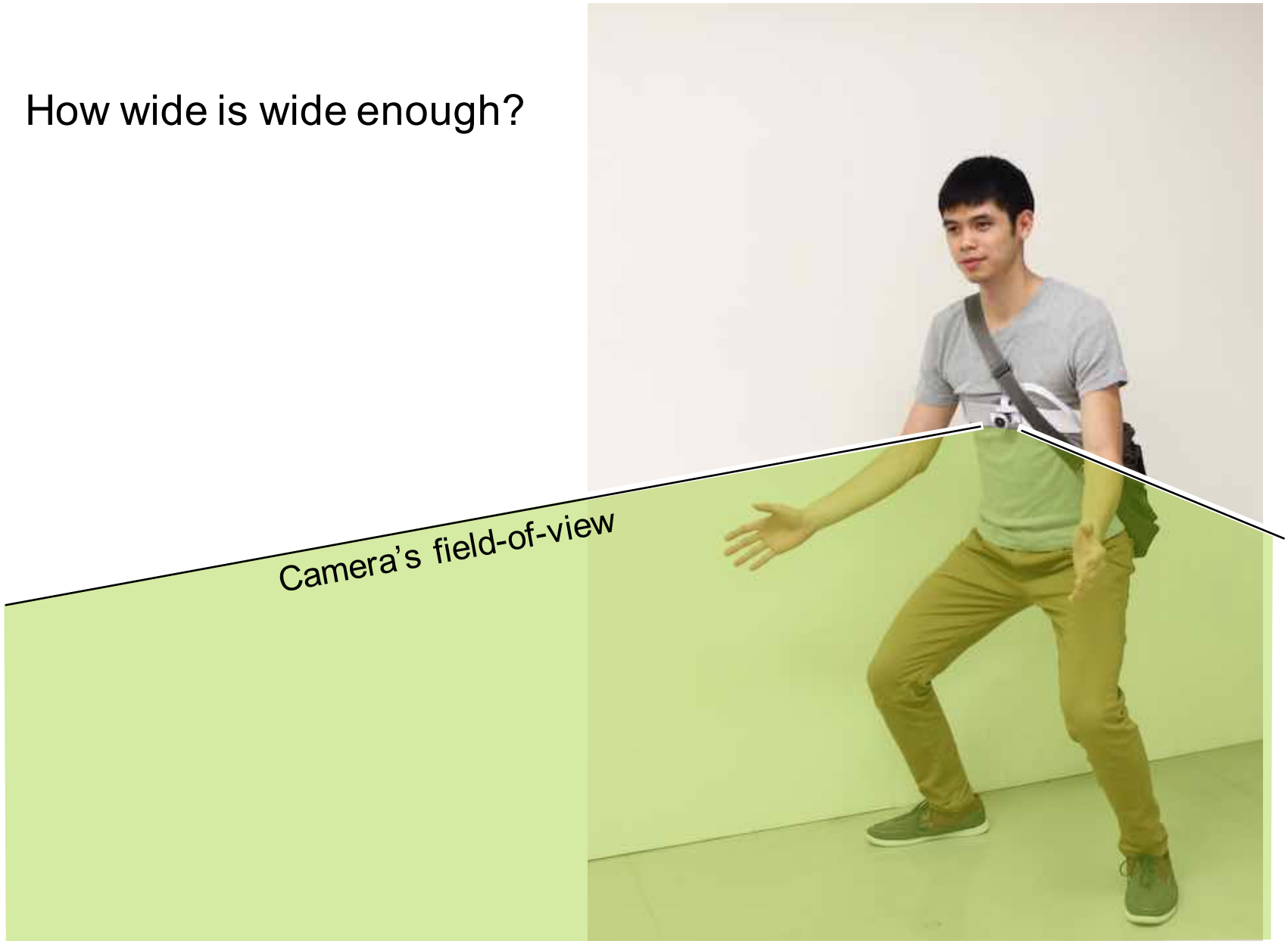
University of Manitoba

University of Alberta

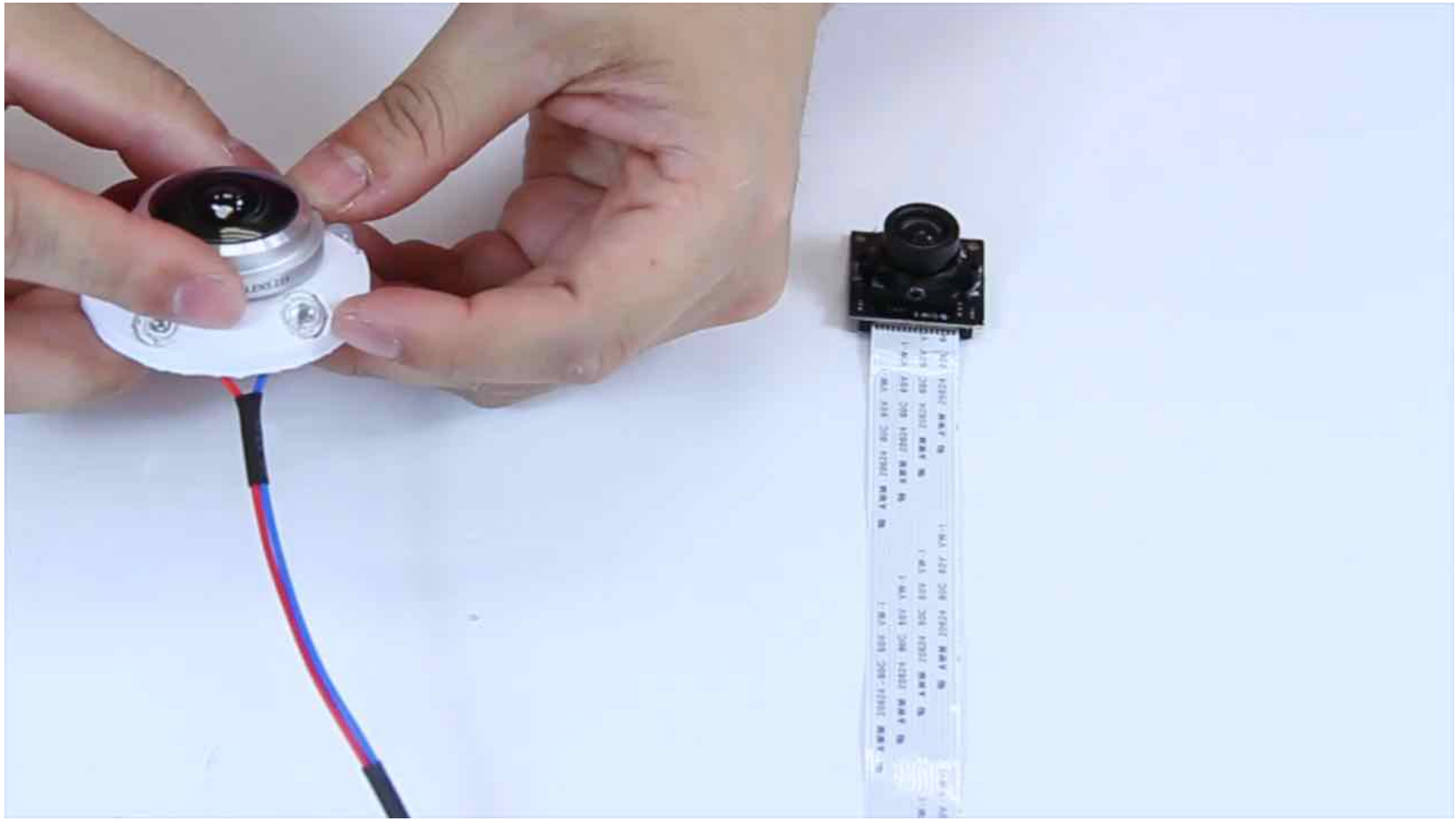


Cyclops [CHI ’15]

How wide is wide enough?

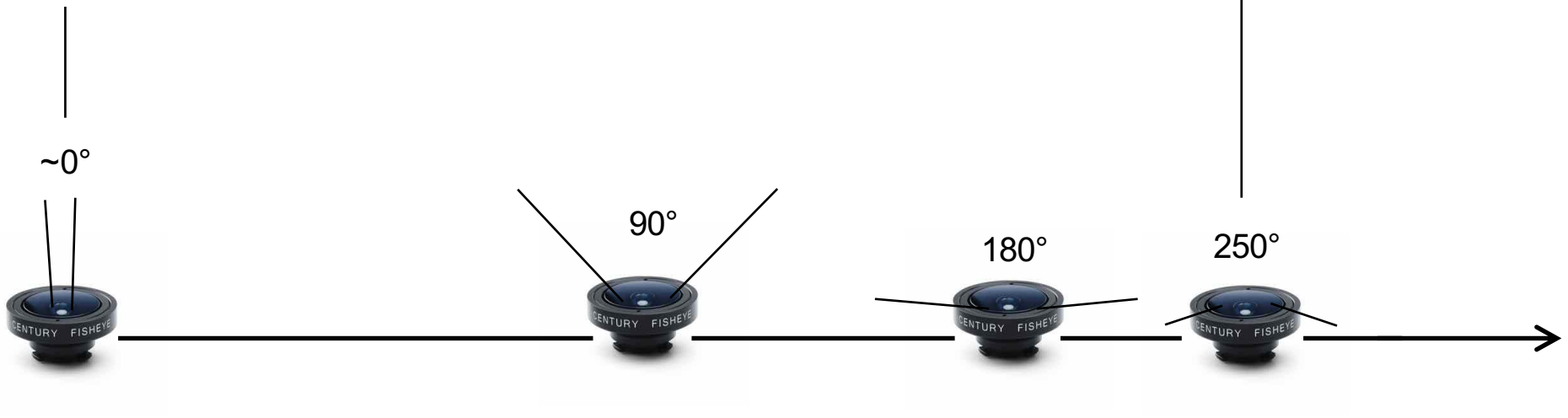


How wide is hide enough?



- Magic Finger

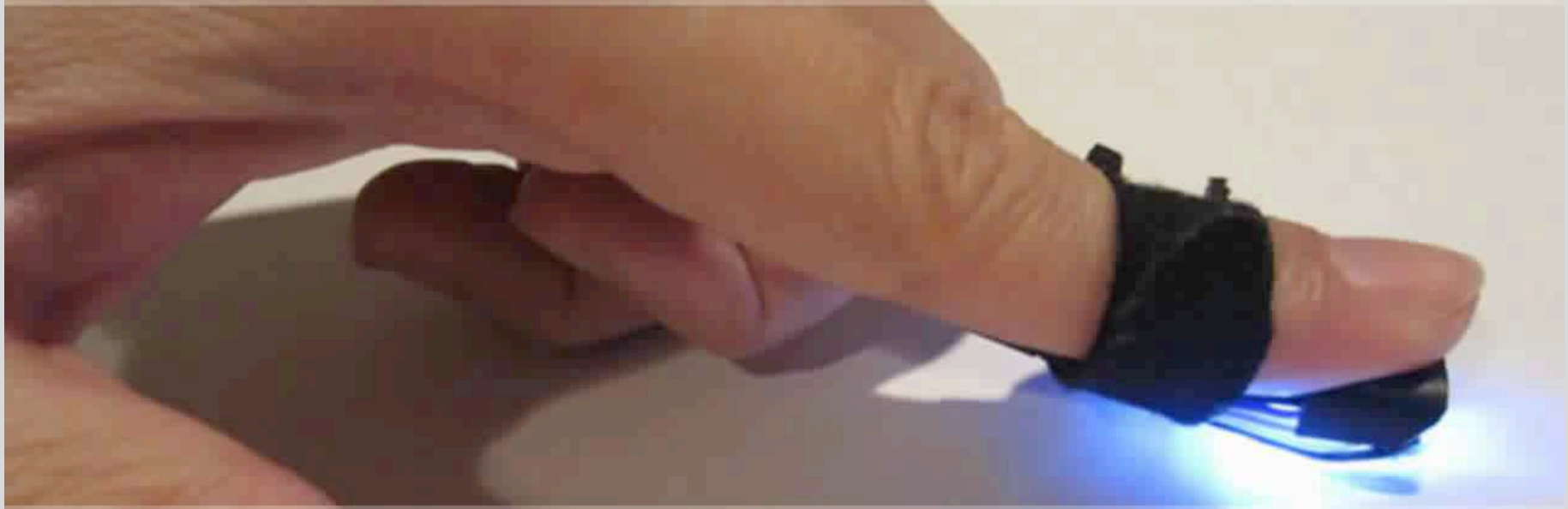
- SurroundSee
- Cyclops



Magic Finger:

Always-Available Input through Finger Instrumentation

Xing-Dong Yang, Tovi Grossman, Daniel Wigdor, George Fitzmaurice



UIST 2012

Computer Science
UNIVERSITY OF TORONTO

Autodesk Research
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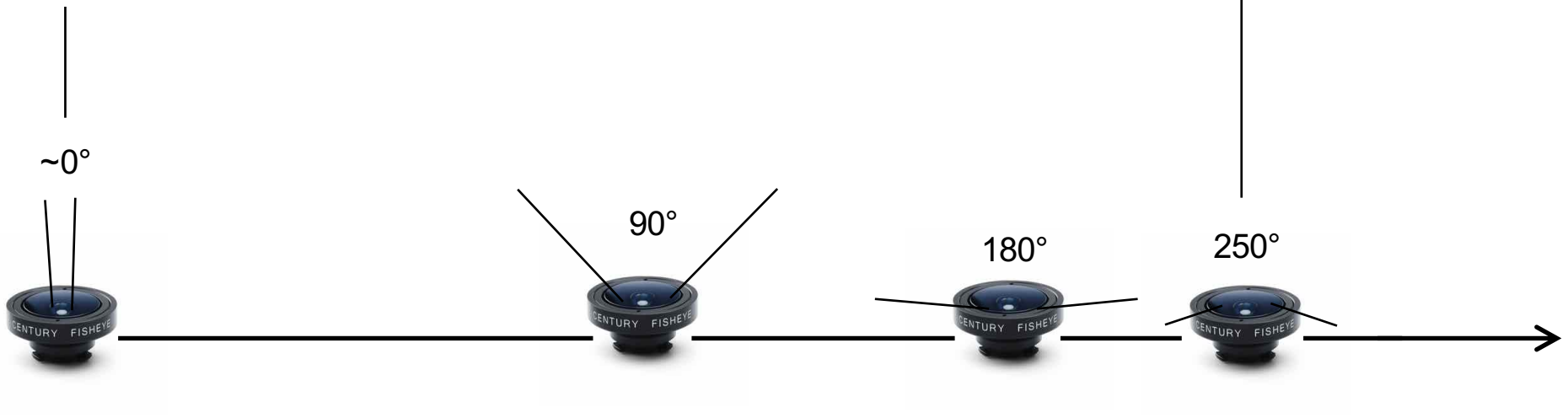
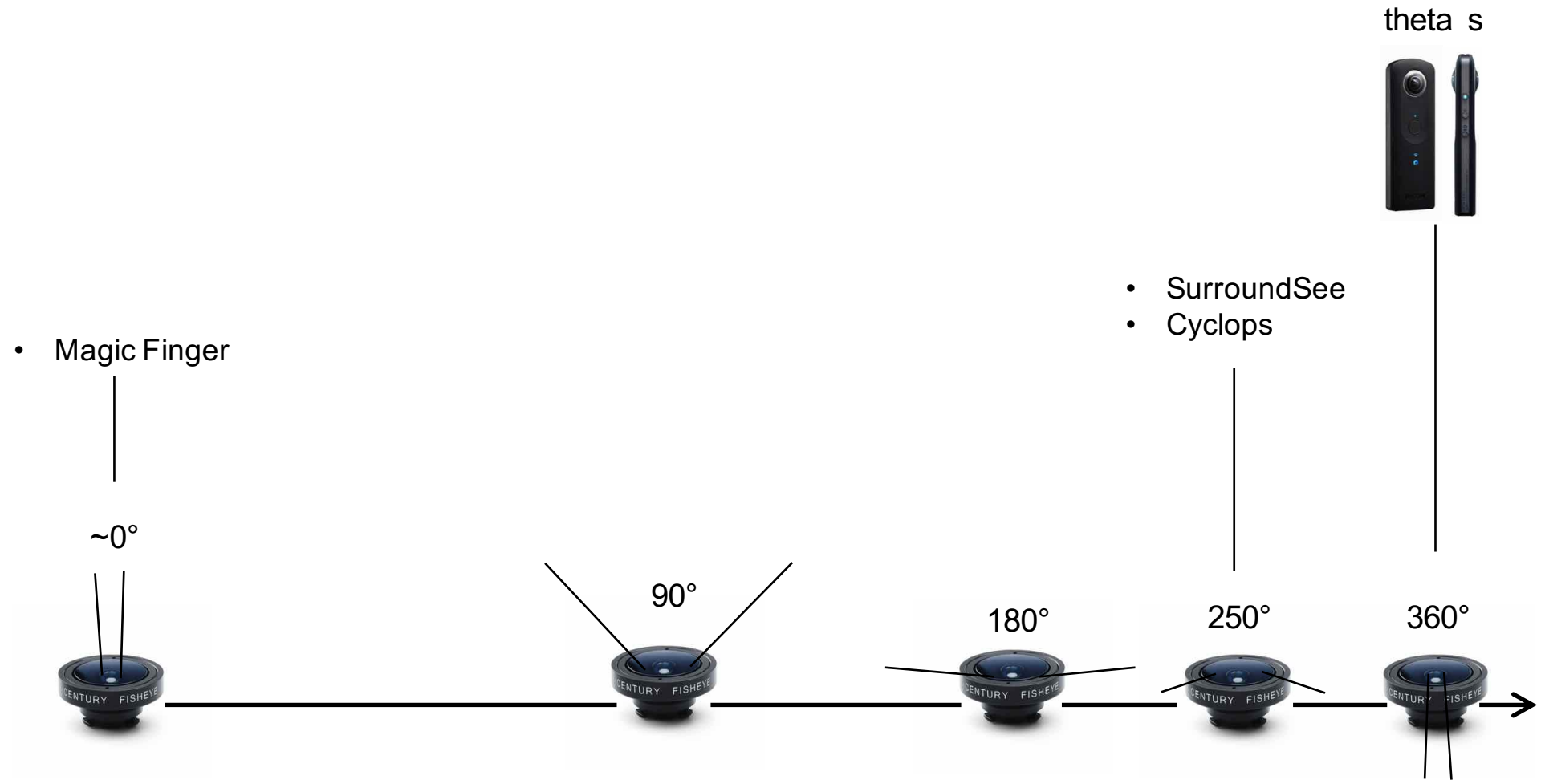
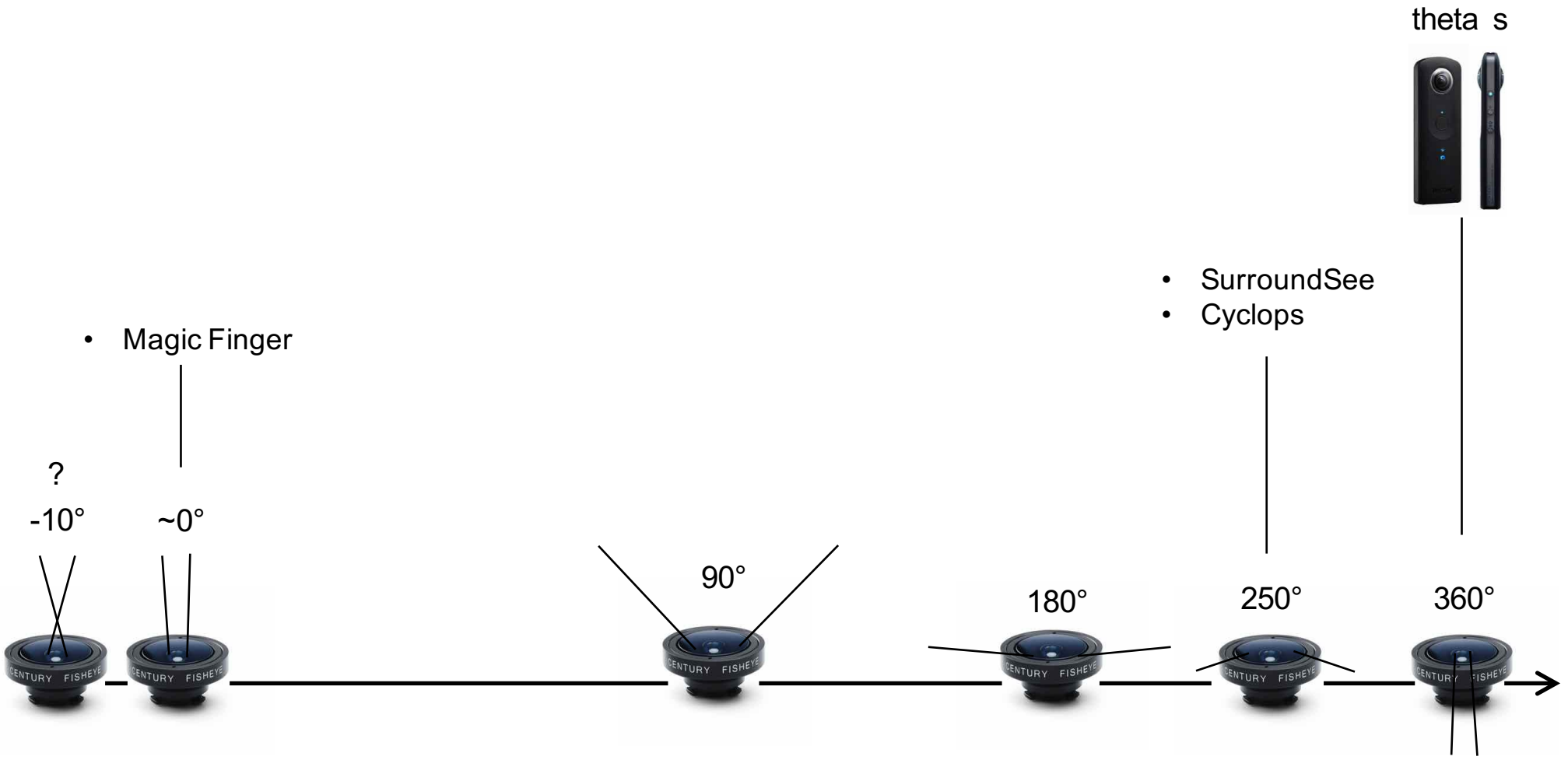
UNIVERSITY OF ALBERTA

- Magic Finger

- SurroundSee
- Cyclops




theta s
• SurroundSee
• Cyclops
• Magic Finger
~0°
90°
180°
250°
360°


theta s
• SurroundSee
• Cyclops
• Magic Finger
?
-10°
~0°
90°
180°
250°
360°