



The Insight Toolkit

Building
Open Science
Communities

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Insight Software Consortium

What is ITK ?

- Software Library
- Written in C++
- Using Generic Programming
- Extreme Programming
- Open Source with Free license

What is Free Software ?

“Free software” is a matter
of liberty, not price.

To understand the concept,
you should think of “FREE” as
in “FREE SPEECH”,
not as in “FREE BEER”.

Open Source Software versus Free Software

“Open source is a development methodology”

“Free software is a social movement”

“For the Open Source movement, non-free software is a suboptimal solution.”

“For the Free Software movement, non-free software is a social problem and free software is the solution.”

Interdit d'Interdire

ITK is Free

as in

“Free Speech”

and...

as in

“Free Beer”

Well...

free for the users...

ITK Sponsors



THE VISIBLE HUMAN PROJECT®



The National
Institute for Dental and
Craniofacial Research



The National
Science
Foundation



The National Institute of Neurological
Disorders and Stroke

National Eye Institute



ITK Developers



NATIONAL
LIBRARY OF
MEDICINE



THE VISIBLE HUMAN PROJECT®



GE Corporate Research
& Development

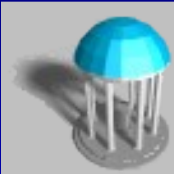


COLUMBIA



Kitware

Insightful
intelligence from data



PENN

VASTLAB



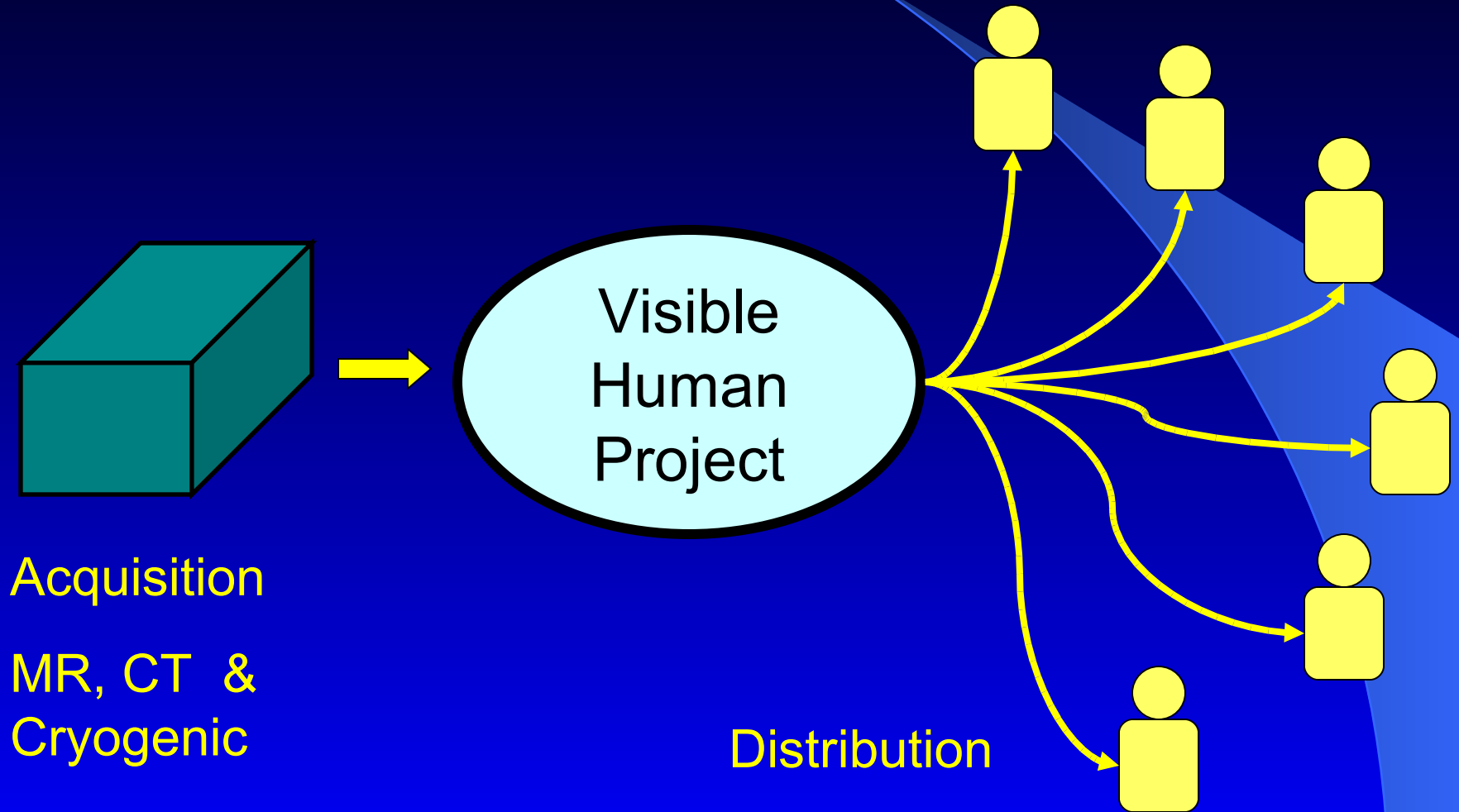
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GRASP LAB

Insight Software Consortium

How did ITK start ?

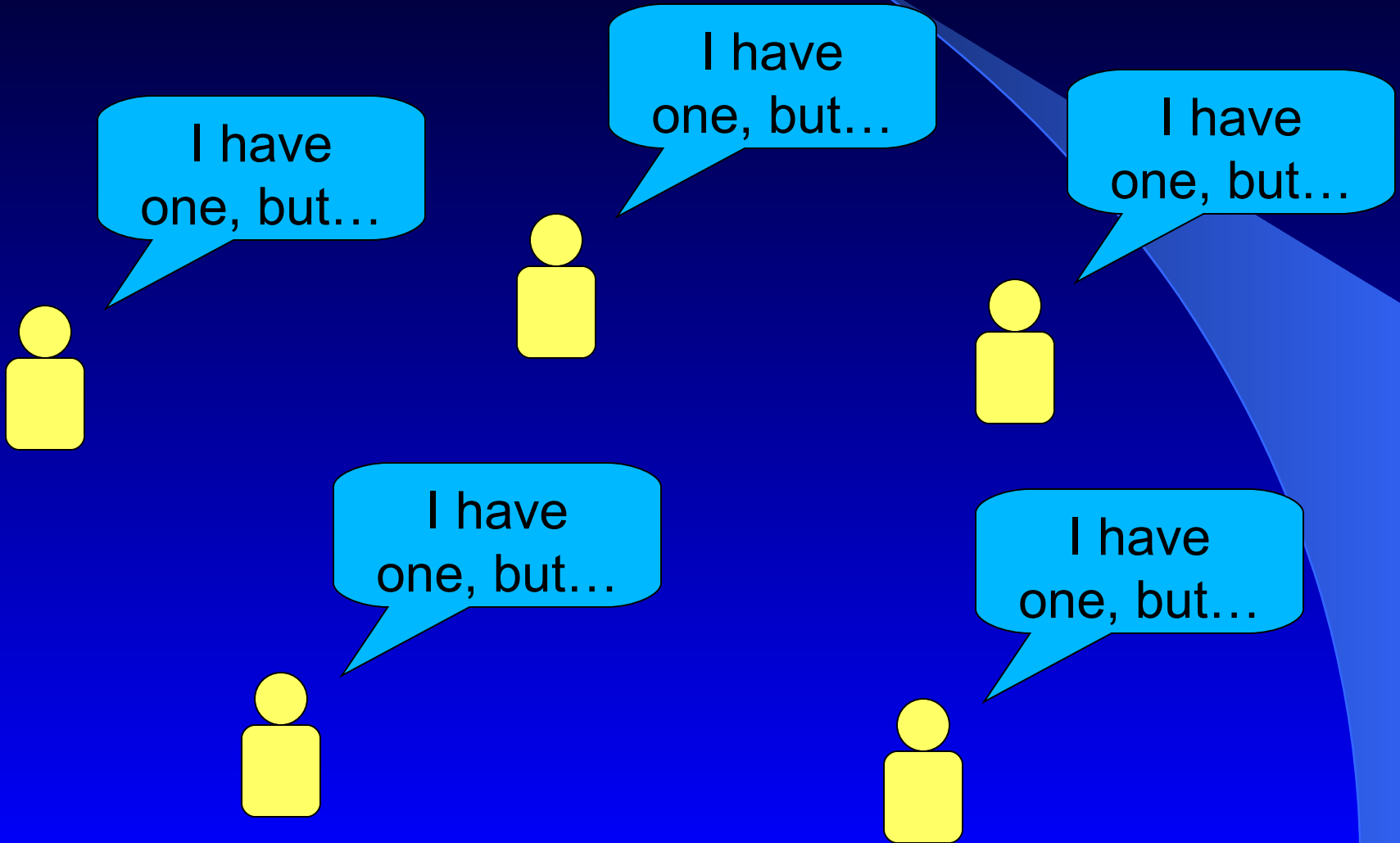


but,

Data was not Enough...

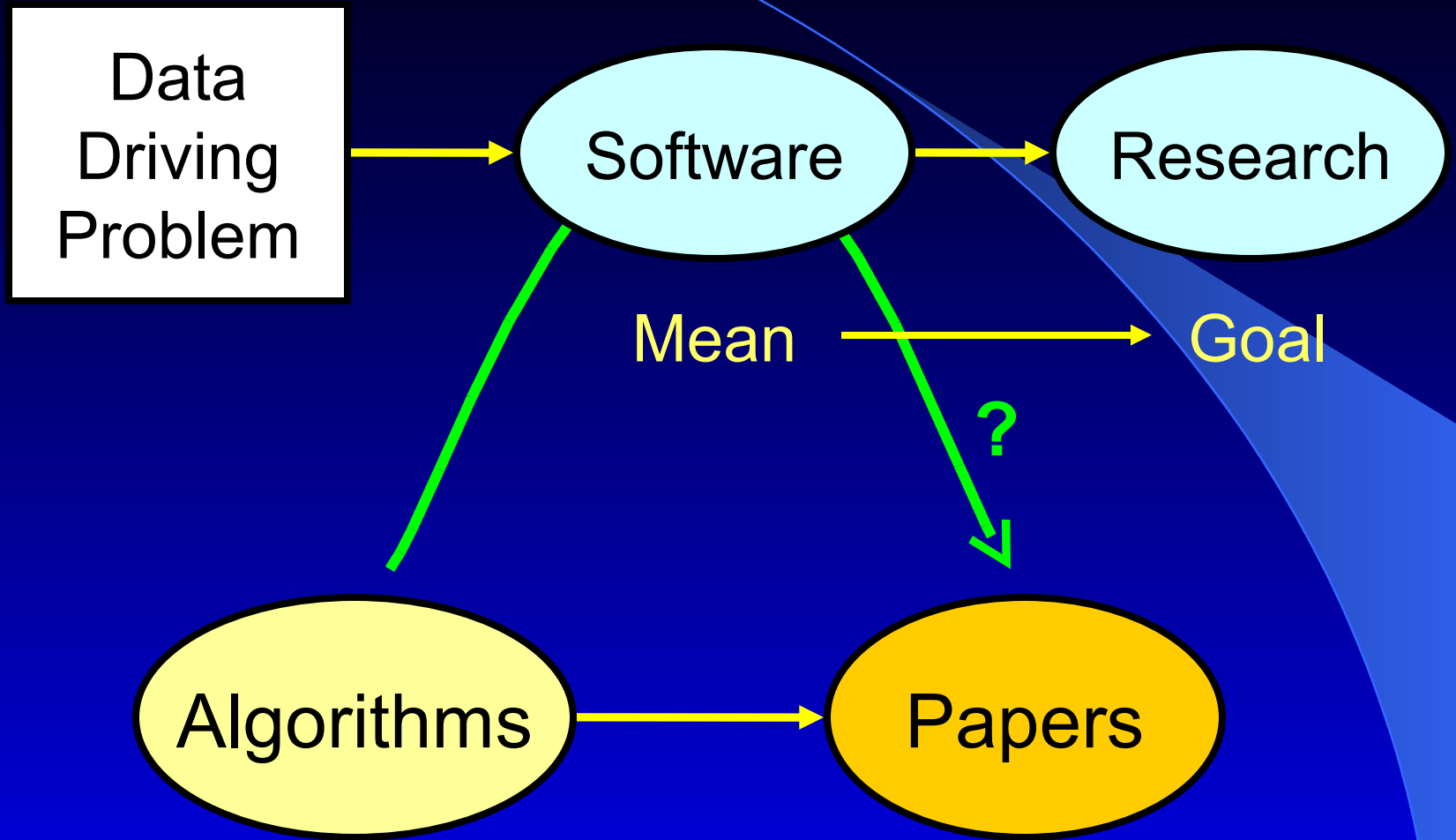
*Software was needed
for analyzing the data*

Use my library...



Developing Software for Research

is an intrinsically
Ungrateful
business



You don't get research credits for:

- Implementing algorithms published by others
- Writing Software Documentation
- Fixing Bugs
- Improving Performance
- Preparing Tutorials
- Porting to new platforms
- Supporting Users
- Making software releases

If you are a student

Software will not give
you a degree...

If you are a professor

Software will not give
you a promotion...

*Software development
is seen as*

not worthy

of a researcher time

Raise your hand

those who can do

Medical Image Processing

without

Software

You do get research credits for:

- Publishing papers
- Publishing books
- Getting Patents
- Getting Funding (Grants, Contracts)
- Licensing your Patents

Why is that ?

Time to face the

Truth

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**Publications
do not
cure Cancer !**

Doctors do not prescribe

“reading papers”

as a treatment.

Medical treatment is done with

- Medical Devices
- Drugs
- Surgical Procedures

Publications that don't lead
to one of those treatments

are sterile publications

Really good
research results
are not published...

They get Patented !

With the hope of being used for

- Medical Devices
- Drugs
- Surgical Procedures



Why do we care so much
about publishing ?

Publications are a measure of scientific productivity

- They disseminate knowledge
- They allow others to reproduce our results
- They are validated by the peer-review process

*Papers disseminate
knowledge*

Information in the 21st Century

Is disseminated
on the Internet

How long it takes to post a
PDF file on the Web ?

At most 1 day

Typically 1 hour

How long it takes to publish
a paper on a Journal ?

At least 1 year

Typically 2 years

How much do you
have to pay for publishing
a paper in a Journal ?

About \$500 / paper

How much do you
have to pay
for reading the same paper ?

About \$30 / paper
or subscribe for \$300 / year

How much it costs to
post a PDF on the Web ?

Certainly less than
 $\$500 + N \times \30

*Papers allow others to
reproduce the results*

Reproducing the Results...

- Do you get source code with the paper ?
- How long it will take you to rewrite this code ?
- Do you get the author's data ?
- How can you get their data ?
- Do you get all the parameters they used ?
- How can you reproduce results if you don't have code, data and parameters ?

And anyways, why do you
want to invest time in reproducing
somebody else's results...

If you don't get
any credit for doing it ?

Have you ever seen a paper
in a Medical Image Journal
whose only content is the
reproduction of results from
another paper ?

Have you ever seen a paper
in a Medical Image Journal
whose only content is the
failure to reproduce the results
of another paper ?

If reproducibility is the goal of publishing...

- You should post your source code
- You should post your data
- You should post your parameters

In the same way that you posted your
PDF file: on the Web.

*Research is validated
by the
Peer-Review process*

How can a reviewer
validate a paper ?

If we just concluded
that papers are not
reproducible...

What does a reviewer
actually do ?

Emit an opinion based on his/
her expertise

How much time does a reviewer dedicate to a paper ?

- 1 hour ?
- 2 hours ?
- 6 hours ?

Why not more time ?

- Reviewers are volunteers
- They don't get paid for reviewing papers
- They don't get credits for reviewing papers
- They have their own papers to write
- They have exams to grade
- Their own grant applications to submit
- They also have families, pets and... a life !

How long does a paper wait on the reviewer's desk before he/she finds time for reviewing it ?

- Six weeks ?
- 6 months ?

How many reviewers typically judge your paper ?

- Minimum Two
- Typically Three
- Exceptionally Four
- Why not more ?
- Why only one time ?

Why do we *really*
want to publish ?

Because we need
to have publications
in our CV

“Publish or Perish”

Who invented this ?

and Why ?

“Publish or Perish”

Was invented by those who
needed to evaluate
researcher's productivity.

“Publish or Perish”

Empowers those who read
your CV to grade you by
simply counting lines in the
“*Publications*” section.

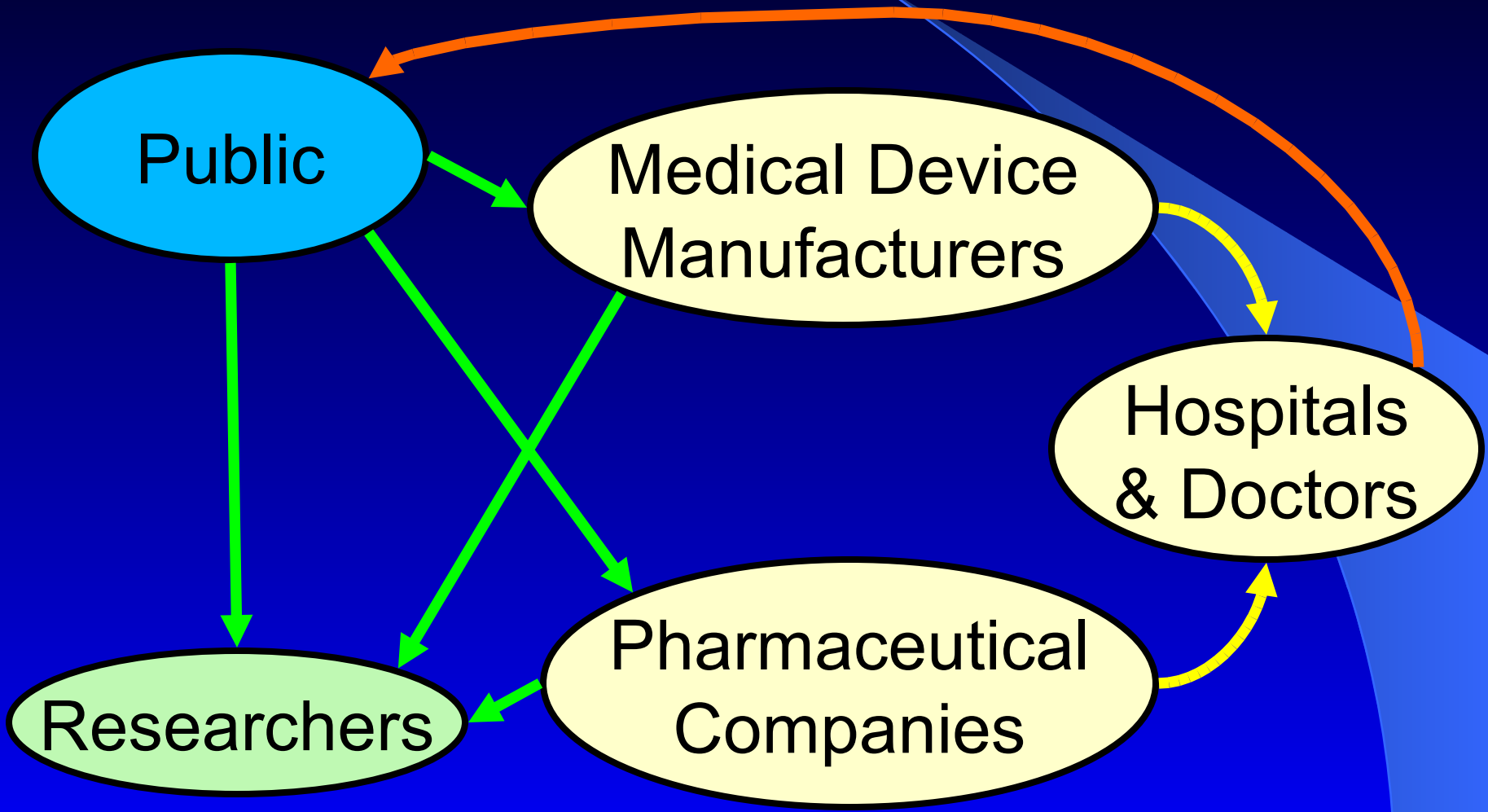
“Publish or Perish”

The group of best educated people in the world has been alienated with a simple trick

Who are you
working for ?

Who really pays
your salary ?

Who pays for Research ?



What do you owe to those
who pay your salary ?

Competition with other
researchers ?

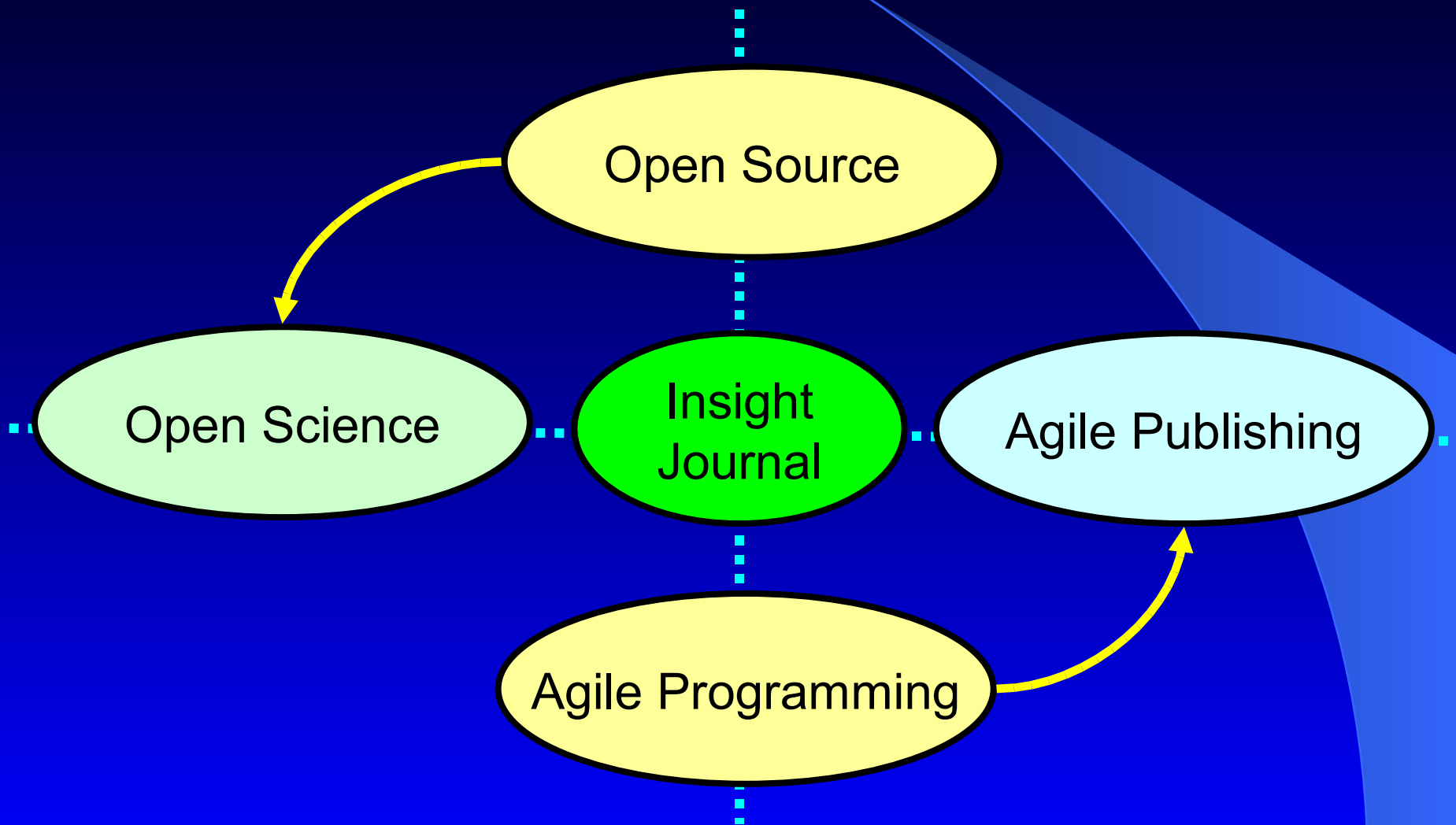
or

Collaboration with other
researchers ?

How to collaborate ?

- Creating public repositories for source code
- Creating public image databases
- Posting parameters on the web
- Creating forums for hosting positive discussions online
- Validating other's methods and suggesting improvements.

The Insight Journal Solution



The background is a solid blue color. A white arc starts from the top left and curves towards the right. A white triangle is positioned on the right side, pointing towards the center of the slide.

The Dark Ages are Over...

The background is a dark blue gradient. A white arc starts from the top left and curves towards the right. A white triangle is positioned on the right side, pointing towards the center. The text "Embrace Open Science !" is centered in a yellow font.

Embrace Open Science !