Title	Four steps to designing research with real impact
Authors	O'Raghallaigh, Paidi
Publication date	2016-10-07
Original Citation	O'Raghallaigh, P. (2016) 'Four steps to designing research with real impact', INFANT Research Seminar Series, Cork University Maternity Hospital, Cork, Ireland, 7 October.
Type of publication	Conference item
Download date	2024-04-19 10:00:58
Item downloaded from	https://hdl.handle.net/10468/9927

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University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

LEANBH Project

Learning to Evaluate Blood Pressure at Home

INFANT Research Seminar Series

Four steps to designing research with real impact

Challenging our Thinking

7th October, 2016
CUMH, Cork

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Presentation

Goal: To challenge participants to think not just in terms of their research but the *impact* that they seek to make through this research …

Content:

- Research for Impact
- Some observations
- Designing for Impact
  - Step 1 - The *''Why'* Question
  - Step 2 - The *'What'* Question
  - Step 3 - The *'Wow'* Question
  - Step 4 - The *'How'* Question

Stretching our innovation thinking …

Research is for Impact

Importance of Research Impact

Two Types of Impacts from Research …

Academic impact is the "*demonstrable contribution that excellent research makes to academic advances, across and within disciplines, including significant advances in understanding, methods, theory and application.*"

Research impact is "*the demonstrable contribution that research makes to the economy, society, culture, … the environment, or quality of life, beyond contributions to academia*".

Importance of Research Impact …

"*As with all public spending it is both desirable and necessary to show value for money and within this demonstrate and articulate the impact and benefits of scientific research projects. In the current climate of constrained public spending there is an even greater focus on demonstrating the economic, social and cultural benefits of publicly-funded scientific research to the wider society …*".

"***SFI will continue to focus on scientific excellence but will now apply an equal focus on impact*** *… and will use experts in the translation, commercialisation and development of scientific research to evaluate research impact as an important and integral part of our review processes*"

Prof Mark Ferguson, Director General, Science Foundation Ireland - UL Research Impact

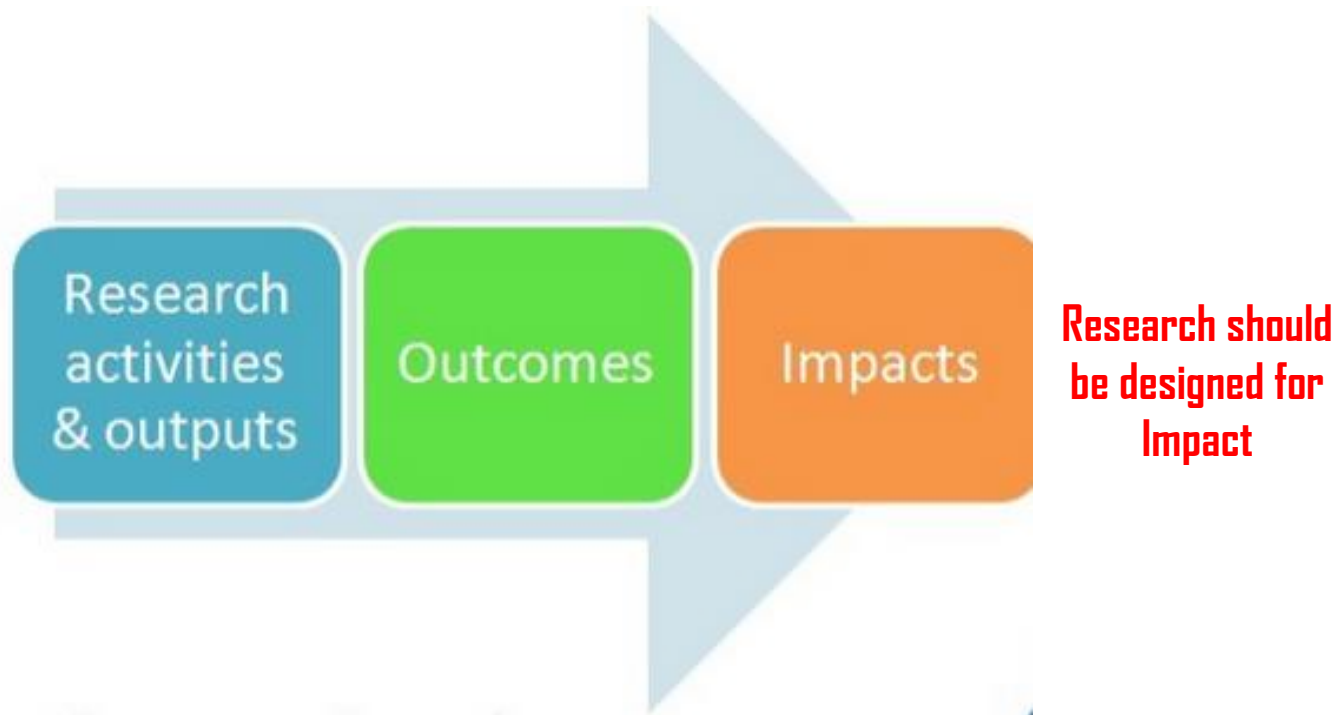Watch at … https://www.youtube.com/watch?v=XmSaWs1mCdA

Research for Impact

Research Impact Statements …

"***Impact statements*** *should be written primarily in lay non-technical language, be as specific and comprehensive as possible and cover potential impacts by answering the following questions:*
- **Who will benefit from this research?**
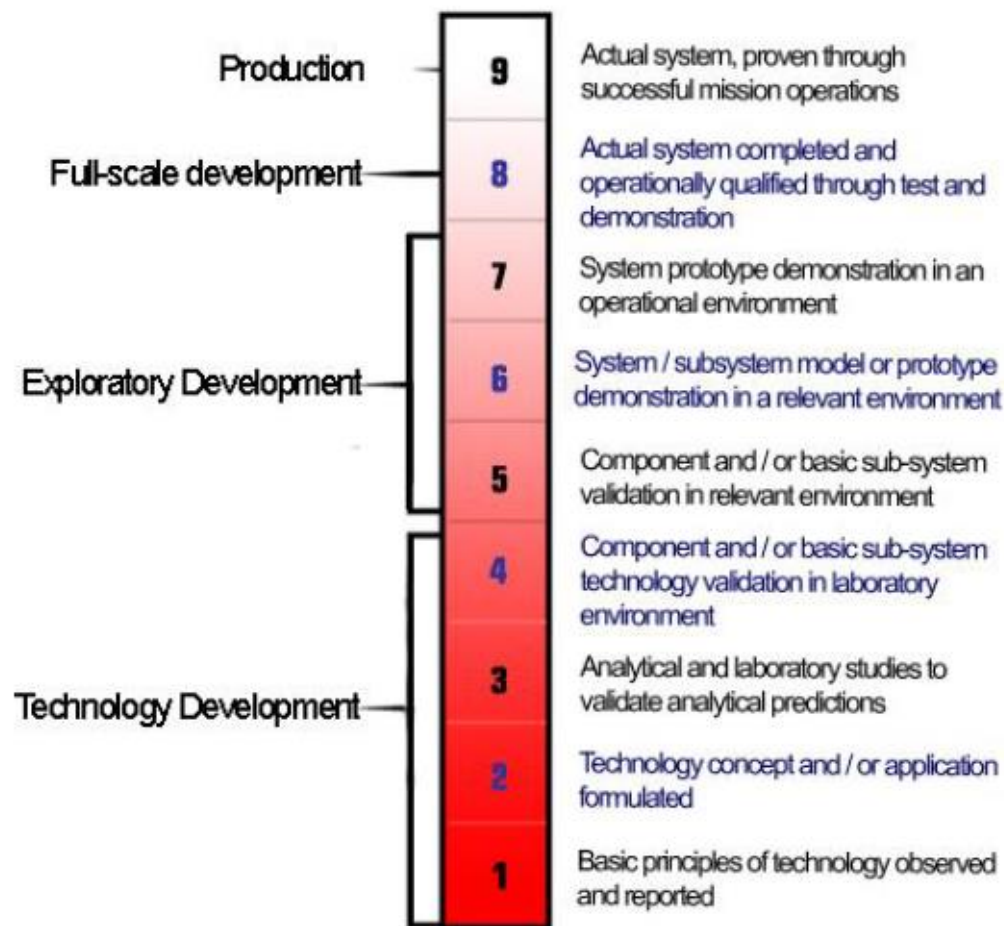- **How will they benefit from this research?**"

Research for Impact

We need to design research with impact …

Research activities & outputs → Outcomes → Impacts

Research should be designed for Impact

Design & Plan

Research for Impact

Measuring Impact Levels …

Technology Readiness Levels are a measure of the maturity or proximity to market of a technology. Lower TRLs (1-3) include demonstration of basic principles through to proof of concept. Medium TRLs (4-7) span technology validation and prototype demonstration and higher TRLs (8-9) refer to pre-commercial deployment up to market introduction.

R&D - Technology Readiness Mapping

Production	9	Actual system, proven through successful mission operations
Full-scale development	8	Actual system completed and operationally qualified through test and demonstration
	7	System prototype demonstration in an operational environment
Exploratory Development	6	System / subsystem model or prototype demonstration in a relevant environment
	5	Component and / or basic sub-system validation in relevant environment
	4	Component and / or basic sub-system technology validation in laboratory environment
Technology Development	3	Analytical and laboratory studies to validate analytical predictions
	2	Technology concept and / or application formulated
	1	Basic principles of technology observed and reported

Research for Impact

Measuring Impact Levels …

Technology Readiness Level (TRL)

Where a topic description refers to a TRL, the following definitions apply, unless otherwise specified:

- TRL 1 – basic principles observed
- TRL 2 – technology concept formulated
- TRL 3 – experimental proof of concept
- TRL 4 – technology validated in lab
- TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 7 – system prototype demonstration in operational environment
- TRL 8 – system complete and qualified
- TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

Research for Impact

Measuring Impact Levels …

SFI Research Centres (RCs). These centres should continue on their existing trajectory, continuing to build strategic linkages with enterprise at the TRL1-4. The RC's main focus will continue to be on oriented basic and short and medium term problem driven research, academic led and industry informed, with industry influence achieved through collaborative research projects, funded through both the Centre and the Spokes funding programmes.
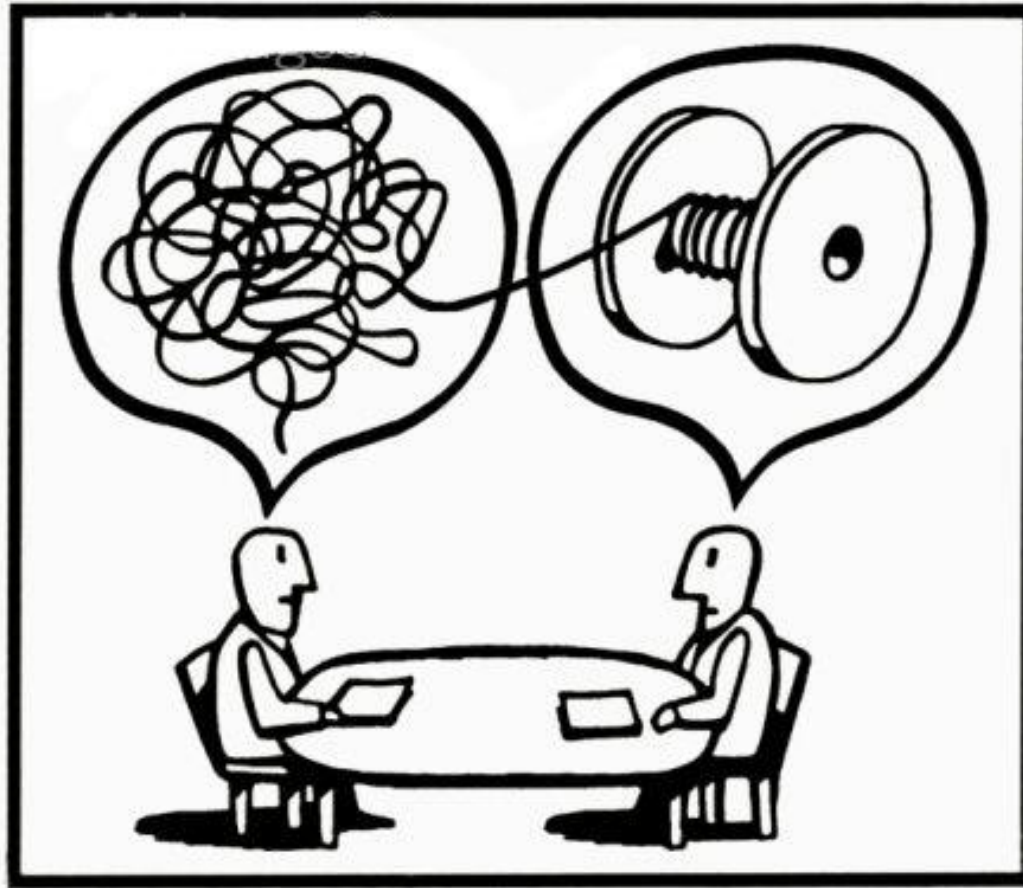
Research for Impact

We need to manage delivery of impact …

Execute & Manage

Research activities & outputs → Outcomes → Impacts
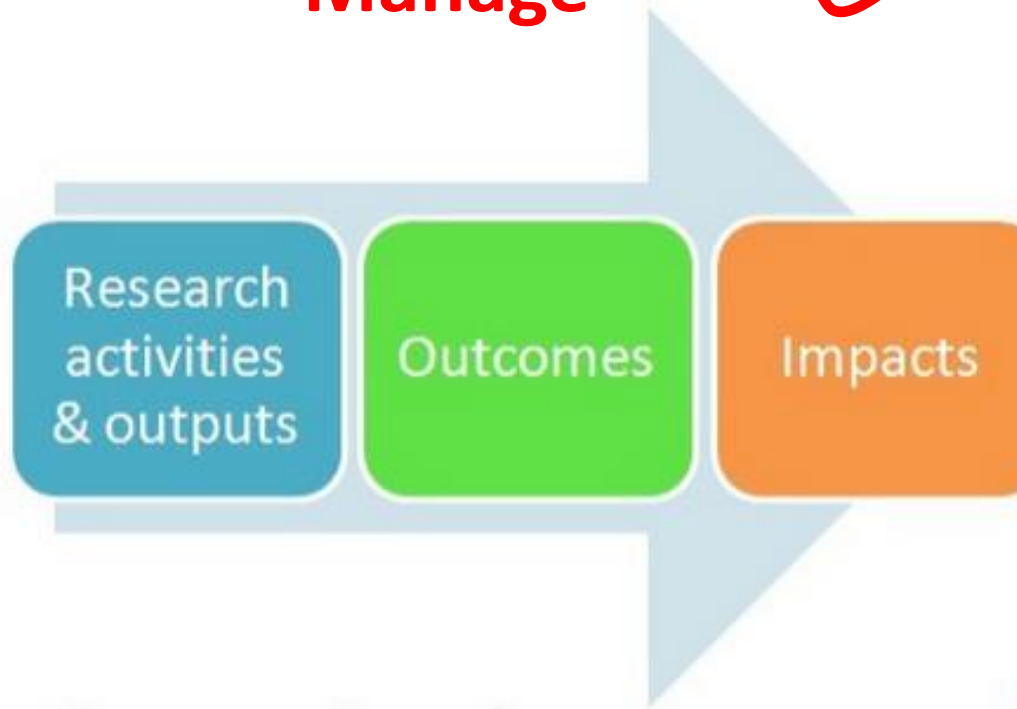
Research should deliver impact'

We need to communicate research impact ...

Designing for Impact

Gifts come at a price …
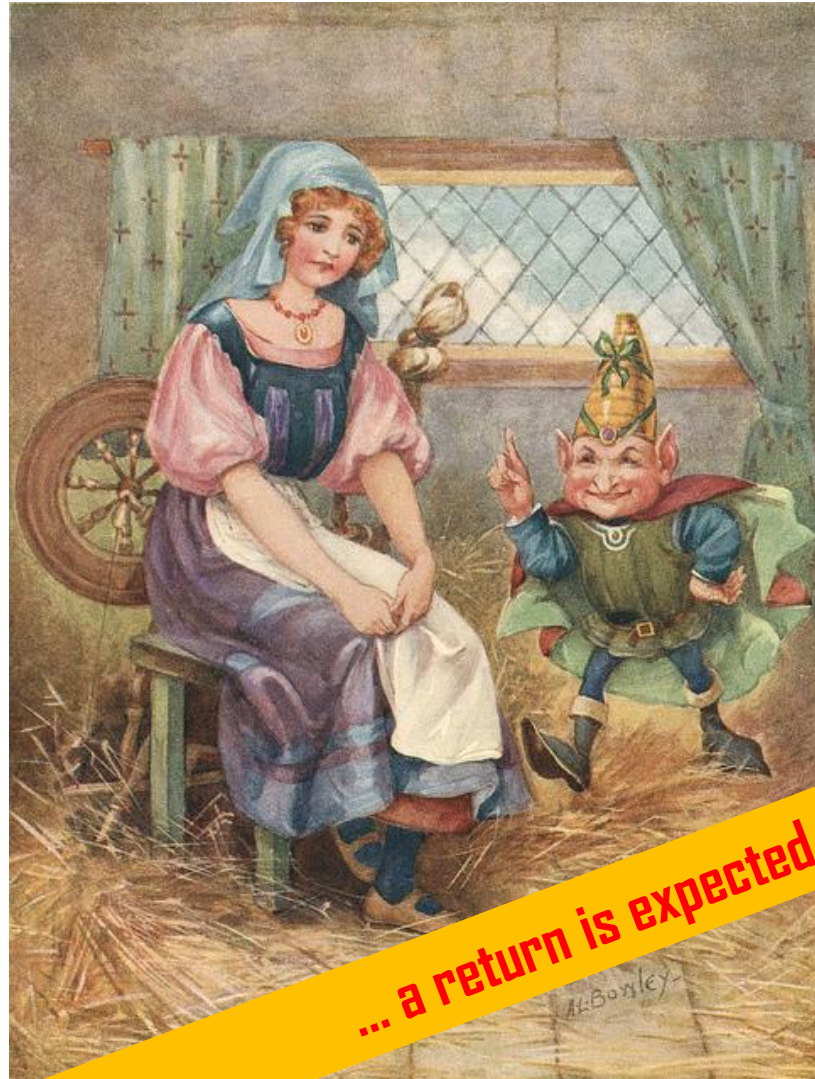
… a return is expected ….

Designing for Impact

Bringing a new mindset

Innovation is about finding …

Start Here

DESIRABILITY

FEASIBILITY

VIABILITY

The c... ... the
...tered Design
... overlap of these
... lenses; they need to be
Desirable, Feasible, and Viable.
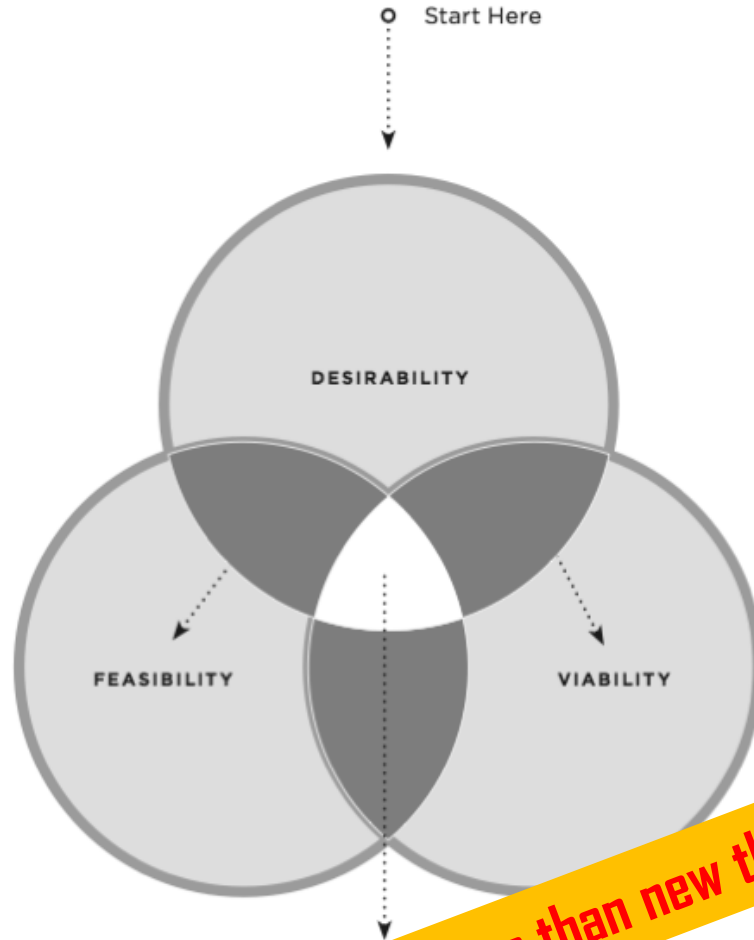
… this is more than new things ….

Source : www.ideo.com

Design Thinking

Science has a role but …

… doesn't mean it must be a leading role ….

Just because a dog can jump …

Doesn't mean everyone wants a ....

Where is the environment …

Consideration of the market front and central …

Where are the stakeholders
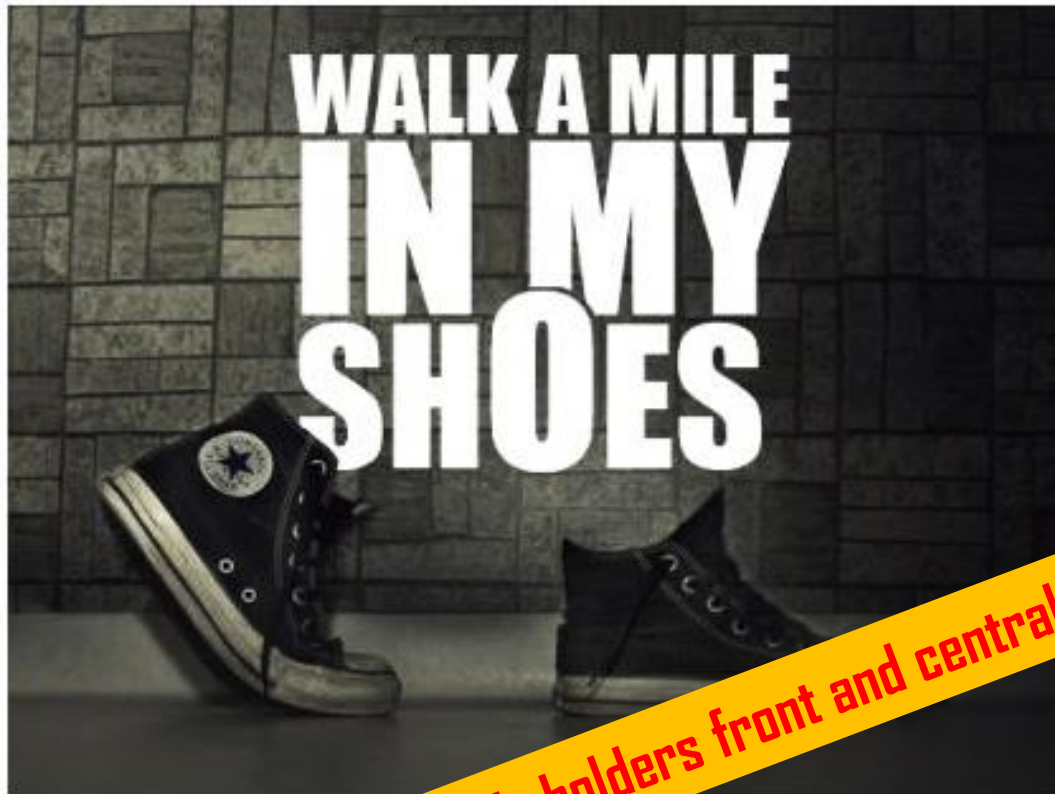
Stakeholders front and central ....

Where is the diversity …

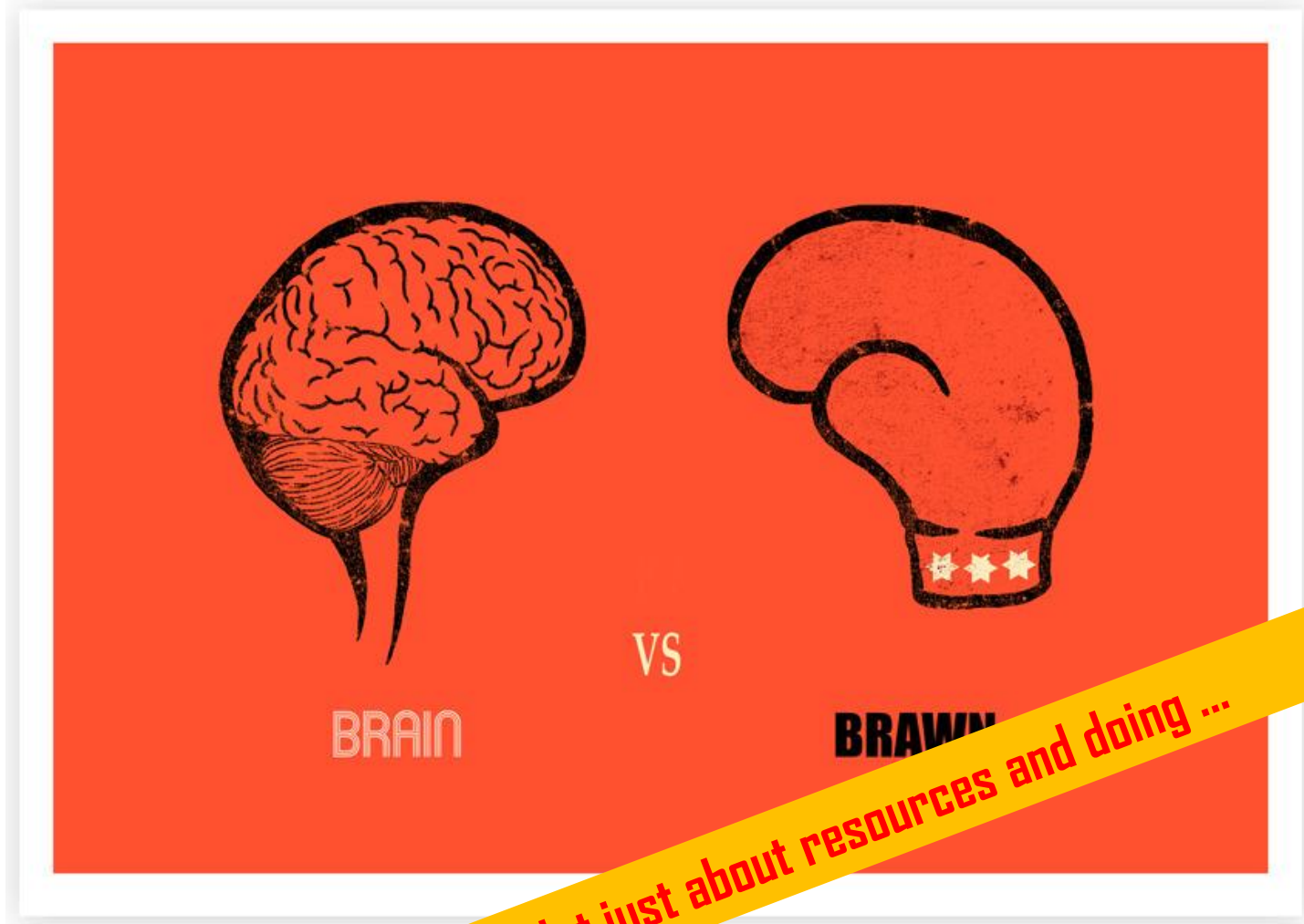Where all think alike,
no one thinks very much.

Walt...mann

… we need to hear different voices ….

Where is the project management …
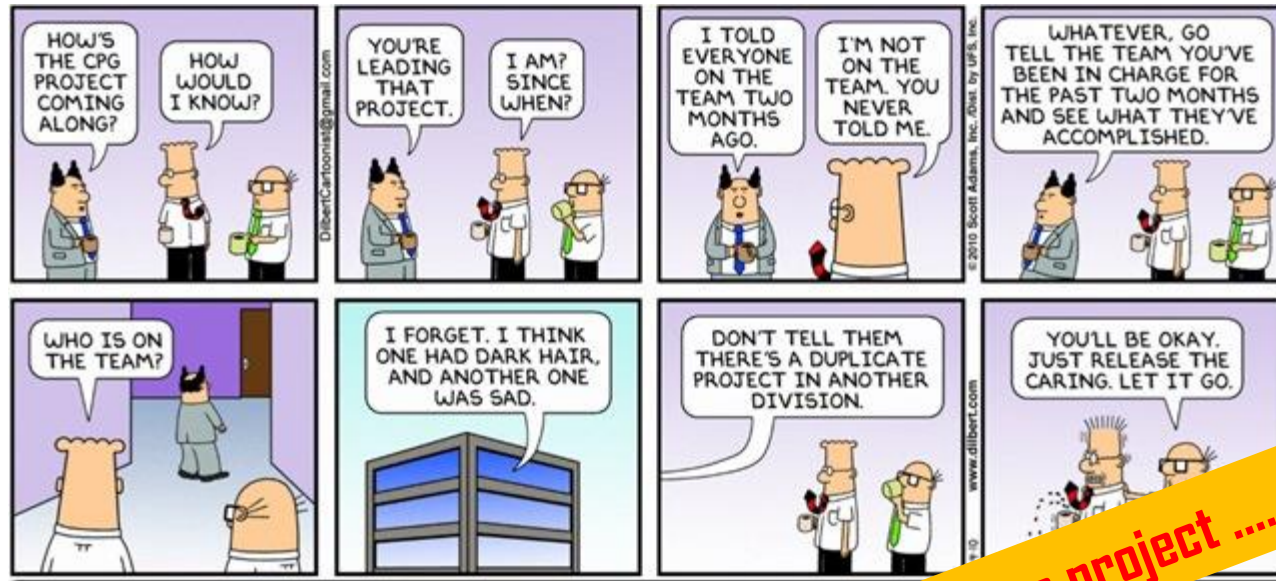
PM is more than a bolt-on to a project ….

Brains from brawn …

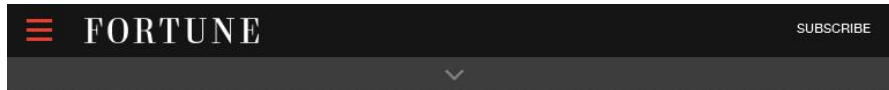Not just about resources and doing …

d set

Focusing on points of failure

The jet black swan has arrived at A... ...annery in Dorset and set up home with the resident ... ...s - which are all white

Zero in on the likely points of failure

Evaluating our thinking

INNOVATION

Why most innovations are great big failures

by Anne Fisher   @anbfisher   OCTOBER 7, 2014, 2:27 PM EDT

Photo: Don Farrall—Getty Images

Companies usually come up with new ideas for pro~~~~~ ~~~~th the tough issues last.

Mark Payne (Fahrenheit 212) advocates "*exposing fledgling innovation ideas to the tough love of tough questions … ensures those ideas can survive in the real world of real companies placing real bets with real money.*"

Most innovations fail because their creators didn't ask tough questions at the outset. Payne recomme~~~~~~~~~~g out the m~~~~~ ~~t practical d~~~~~~, *even if it means ~~~~~ng up the issues that will kill a project now, rather than discovering them later.*"
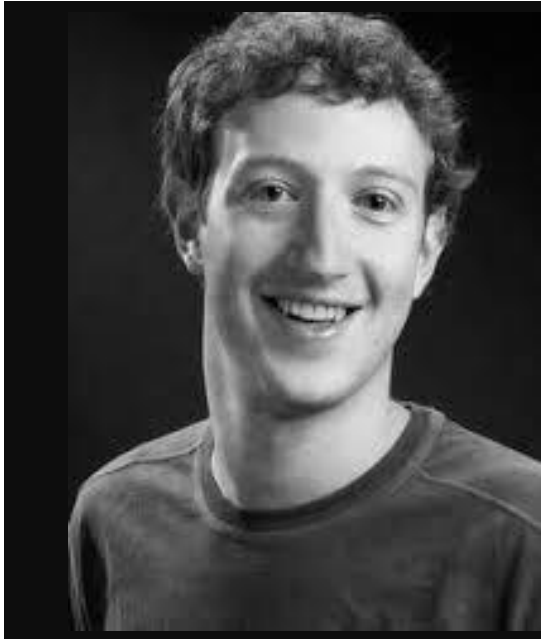
Ask the hard questions early

Creating a bias for doing …

Prototype to learn

Innovation involves risk ...

"*The biggest risk is not taking any risk... In a world that changing really quickly, th only strategy that is guaranteed to fa taking risks*

- Mark Zuckerberg

We need to be open to 'controlled' failure

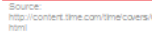# Designing for Research Impact

The search for impact

Start with the 'So What'?

Starts **before** you commence your research journey!

Research Game: Design the Cover Story

Object? The object of the game is to suspend disbelief and to envision a future state that is so stellar that it landed your research on the cover of a well-known media outlet. The players pretend as though this future has already taken place and has been reported by the mainstream media.

Why? It is a game about imagination, whose purpose is to think expansively around an ideal future state for the organization; it's an exercise in visioning the future impact of an opportunity. This game is worth playing because it not only encourages people to "think big," but also actually plants the seeds for a future that perhaps wasn't possible before the game was played.

Source: http://content.time.com/time/covers/0.html

So What?

Research Game: Design the Press Release

PRESS RELEASE

Date/Timing
Release Date

Title
Location

Paragraph 1/Intro

5 W's: Who, What, Where, Why, When

About/Bio

Contact Details

Source: websitetonight.com/press-release-template.html

So What?

Research Game: Design the Box …

Object? The team creates a box for the idea (whether or not it will become a tangible product) as if it is to be sold at retail. Typical box elements include *product name*, *product category*, *tagline*, *key benefits*, and *top features*. Visual elements that set the tone and design direction can also be included.

Why? This game encourages conversation about what really matters. It constrains conversation to a specific format to boost productivity of discussion. It creates a common, tagline touchstone that communicates a shared product vision.

Wow?

STEP 1

Research Game: Design the Press Release

Date/Timing
Release Date

Title
Location

Paragraph 1/Intro

5 W's: Who, What, Where, Why, When

About/Bio

Contact Details

Designing for Impact

Translate the Vision to 'The What?'

BENEFACTOR 1

BENEFACTOR 2

FOR:

JOBS:

OUTCOMES:

STEP 2

Example – Microbiota Research

FOR: Consumers | Food Safety Authorities | Industry | Economy | Society

JOBS:
- Manage Family Health
- Consume healthy products
- Advise on Healthy Eating
- Monitor Safety
- Control Diet-related Diseases
- New/Improved Processes
- New/Improved Products
- Future Economic Value
- Share Knowledge
- Promote Healthier Population
- Promote Healthier Workforce
- Promote Animal Welfare
- Build Environment Awareness

OUTCOMES:
- Increase Family Wellbeing
- Reduce Diet-related Diseases
- Reduce Food Safety Cases
- Increase shelf life
- Reduce Wastage
- Increase Sales
- Modernise Economy
- Increase Networking
- Increase Employment
- Reduce Chronic Disease
- Increase Health Safety
- Reduce out of work days
- Reduce waste
- Improve Animal Welfare

Benefits of pro-biotic products …

10,000 reduction in food safety cases and saving the economy 15m euro pa …

Adding shelf life to chilled products contributes 24m euro pa …

Each 1 euro in research delivers 8 euro in ROI to the economy …

Save the national health system 5m euro. Save 4m euro in *lost work days* from bowel disease alone …

Designing for Impact

Drill from 'The What' into 'The Wow?'

Research Game: Creating a Research Value Proposition

20 min.

My research provides: _Outputs_

To: _Stakeholder(s)_

In order to: _Purpose of outputs_

That is different in that: _Differentiators_

Copyright Paidi O'Reilly

Wow?

RXF Worksheet

Research Purpose

The title of my research is _Research Title_

My research addresses the question of: _Research Question_

RXF Worksheet

Impact

If successful the impact of the research will be to: _Impact factors_

Even if unsuccessful the impact of the research will still be to:

The limitations of my research are:

Future Directions

RXF Worksheet

STEP 3

Lessons Learnt

What I learnt most from my research was: _Personal Lessons_

What others can learnt most from my research is: _External Lessons_

RXF Worksheet

Research Game: **Extracting the Research Value Proposition**

Our research provides:

| Outputs |

To:

| Stakeholder(s) |

In order to:

| Purpose of outputs |

That is different in that:

| Differentiators |

Finally move to 'The How?'

STEP 4

Research Game: Plan your Pathway to Value …

20 min.

Help
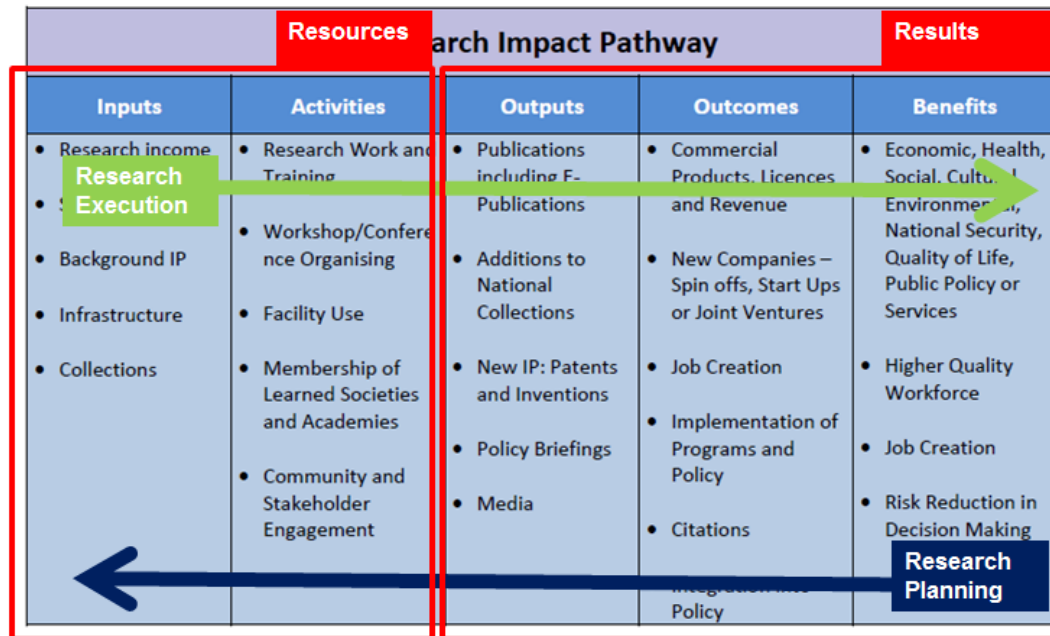
Prompt:
Start at the right (with the benefits) and work left …

Research Impact Pathway

Resources		Results		
Inputs	**Activities**	**Outputs**	**Outcomes**	**Benefits**
• Research income	• Research Work and Training	• Publications including E-Publications	• Commercial Products, Licences and Revenue	• Economic, Health, Social, Cultural, Environmental, National Security, Quality of Life, Public Policy or Services
Research Execution	• Workshop/Conference Organising	• Additions to National Collections	• New Companies – Spin offs, Start Ups or Joint Ventures	
• Background IP	• Facility Use			
• Infrastructure	• Membership of Learned Societies and Academies	• New IP: Patents and Inventions	• Job Creation	• Higher Quality Workforce
• Collections		• Policy Briefings	• Implementation of Programs and Policy	• Job Creation
	• Community and Stakeholder Engagement	• Media	• Citations	• Risk Reduction in Decision Making
			Integration into Policy	**Research Planning**

Source: http://funnyshit.com.au/img/not-my-job-redux.jpg

Moving from 'playing not to lose' to 'playing to win'
Doing things right versus doing the right things.

Many Thanks

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