



BEFORE LEAVING THE EXHIBITION
"SEE"
THE WONDROUS
X RAYS
The
Greatest Scientific Discovery
of the Age.

By the aid of the New Light you are
enabled to see

"THROUGH A SHEET OF METAL"

"THROUGH A BLOCK OF WOOD"

AND ALSO

"Count the Coins within your Purse."

ADMISSION - 3d.

OPEN ALL DAY.

X RAY PHOTOGRAPHS TAKEN.

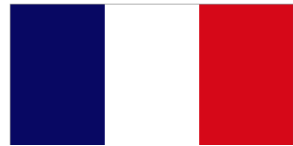
PTO

BUSINESS & INDUSTRY AT THE ESRF



**Ed Mitchell, Head of ESRF Business Development
Honorary Professor, Keele University (UK)**

SCIENCE AND INDUSTRY ARE (INCREASINGLY) INTIMATELY LINKED



Research Infrastructures

Horizon 2020 will endow Europe with world-class research infrastructures that are accessible to all researchers in Europe and fully exploiting their potential for scientific advancement and innovation.



Mission: to increase ESRF-industry interactions

- Access to beamlines, facilities, and expertise
- Technology transfer through licensing, patents, spin-off
- Manufacturing
- European and national funding opportunities

About 5 FTE + other resources as we can obtain

- Call upon Finance and Legal for support as well as the goodwill of all ESRF staff

BUSINESS MODEL

2% of beam time used for confidential work

- Generates 1.5-2M€
- 100 unique clients
- Industry from TRL 1-9

~40% of public beam time science has links to industry

- Universities with industry
- Industry on its own

Instrumentation & Technology IP

- 30 technology licences
- Synchrotron instrumentation
- Design/project consultancy

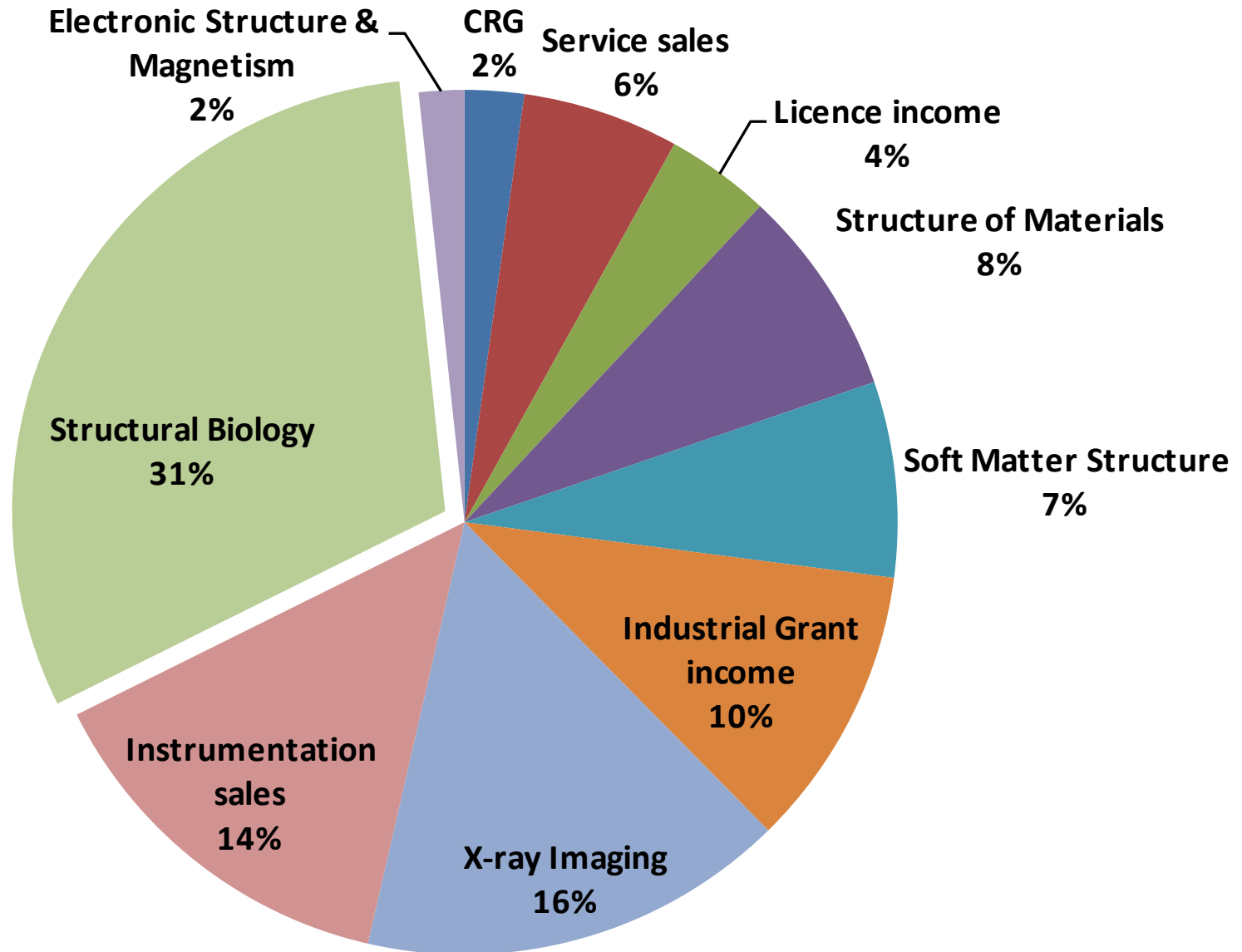
Contract Research & Partnerships

•  NANO ELEC.

- SaintGobain funded Post-Doc
- Joint student GSK-ESRF-ILL
- Horizon 2020



2013: 2.1MEUROS INCOME GENERATED





TOP SECRET



ArcelorMittal



Bayer HealthCare
Bayer Schering Pharma

Medivir



TOTAL



AREVA



MERCK



Vernalis

Schneider
Electric

astex[™]
therapeutics



Rhodia

GALDERMA

R & D
SOPHIA ANTIPOLIS



CORNING



novo nordisk[®]



numericalrocks



Groupe
sanofi aventis

L'essentiel c'est la santé.



TOYOTA CENTRAL R&D LABS., INC.



Johnson Matthey

syngenta



NERVIANO MEDICAL SCIENCES

L'ORÉAL
RECHERCHE



GlaxoSmithKline

Sareum



DAIHATSU

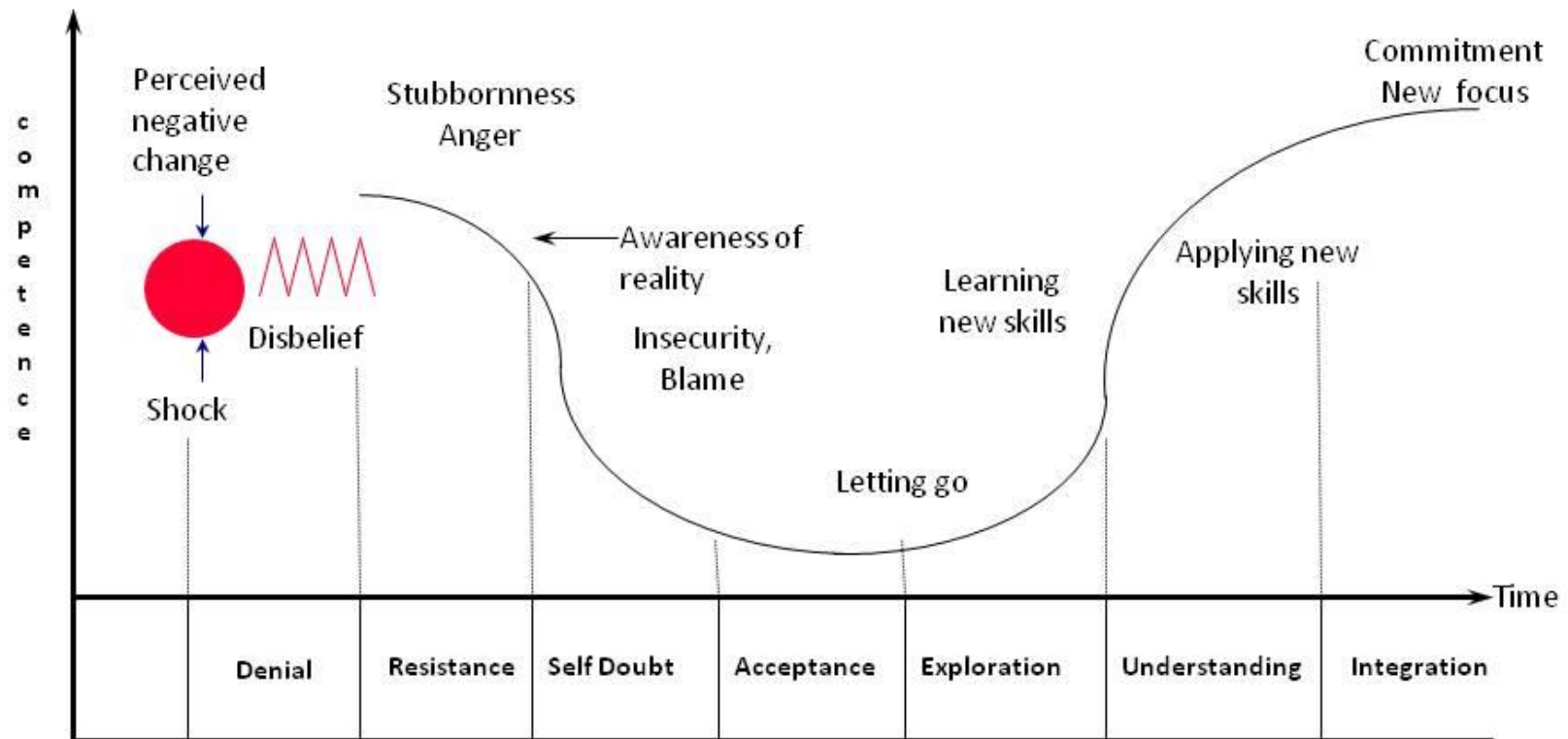
AstraZeneca



Unilever

Challenge 1: Buy-in of ESRF staff and facilities.

Psychological Reactions to Change



Adapted from the work of Elizabeth Kubler-Ross

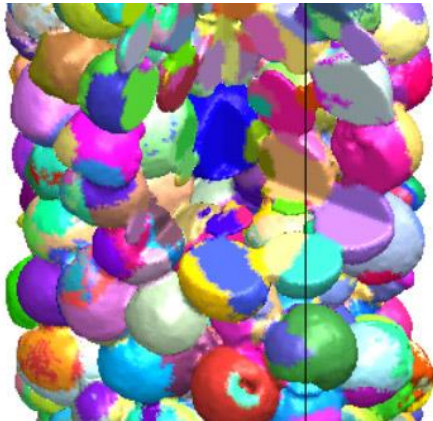
AN INDUSTRY- AND INNOVATION-FRIENDLY CULTURE

- 1. Managing staff expectations during recruitment**
- 2. Staff training on working with industry, use of IP tools, confidentiality...**
 - Create a Code of Conduct
 - Automatic reflex to “think IP” before publishing
- 3. Bring industry into the ESRF meritocracy**
 - Reward staff in the same way and level as done for “traditional” ESRF work
 - Make industry a review point in annual appraisals
- 4. Return percentage of income to the earning teams**
- 5. In-pocket rewards for “inventors” and ”exploitants”**
- 6. Beam time scheduling sensitive to industry access**

Challenge 2: Getting Industry-as-a-user on board.

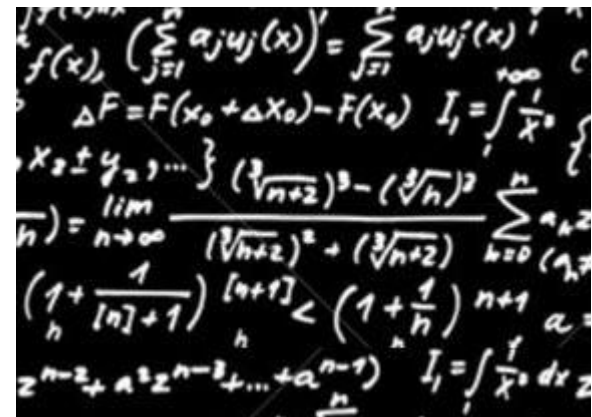
Our view of the ESRF:

- Unique large-scale instrument
- State-of-the-art
- Fantastic science!

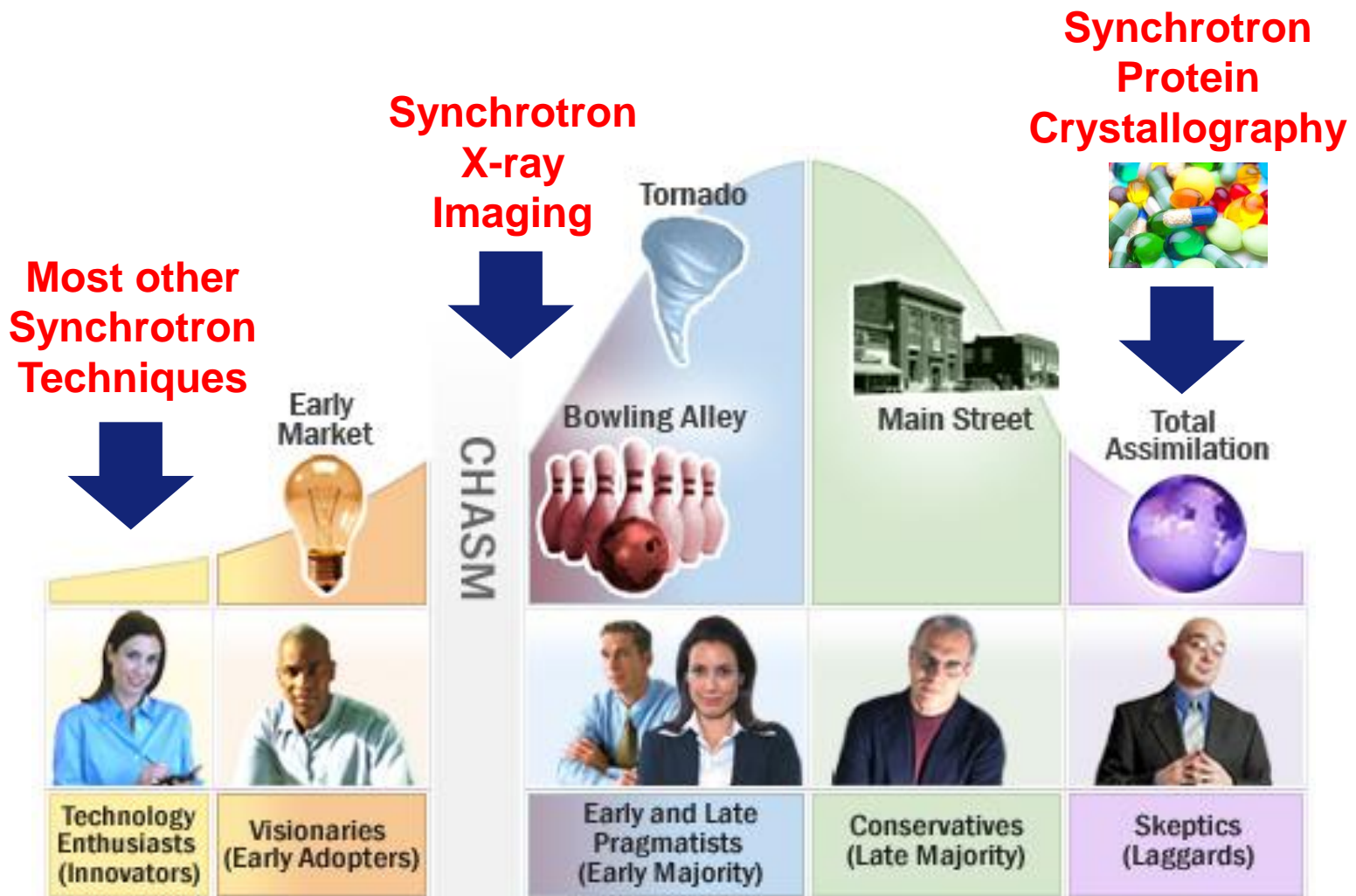


Industrial translation:

- Expensive and difficult to use
 - Risky
 - Fundamental science
- Not for me.**



SYNCHROTRON X-RAYS: AN INDUSTRIAL COMMODITY?



Geoffrey Moore; www.chasminstitute.com

CROSSING THE CHASM



ENTREPRENEURS STARTING TO FILL THE GAP....



Copenhagen
University

:CR: Colloidal Resource



Technical University of Denmark

+ Facility staff: Four staff actively approached BDO about consulting or service start-up.

Almost 90% women-led or women being pro-active.

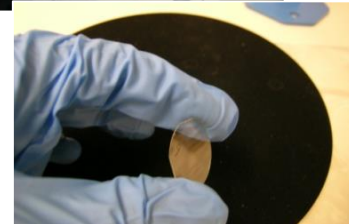
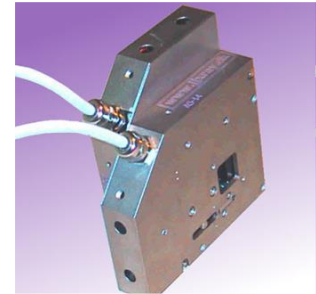
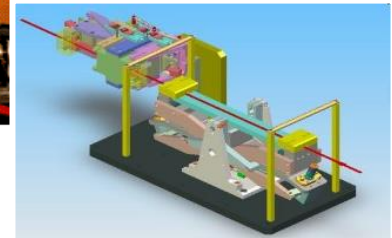
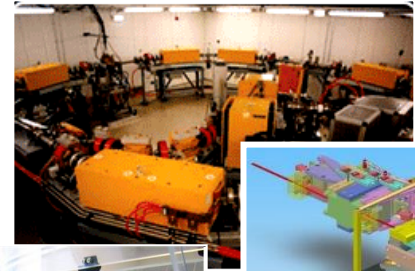
- 1. A common understanding with awareness, education and training.**
- 2. Dedicated, missioned resources to work with industry.**
- 3. Industry-friendly culture with minimal admin, able to go beyond simply data provision.**
- 4. National facility patriotism.**

Challenge 3: KTT to industry.

EXPLOITING OUR INTELLECTUAL PROPERTY

- **Licensing** instrument designs
- **Manufacturing** unique equipment for other RI
- **Consultancy** for engineering design
- **Patents** are not a favourite tool
- **Our software** is open source
- **Member** of EIROForum IMK-TT, TTO-Circle, Gate1

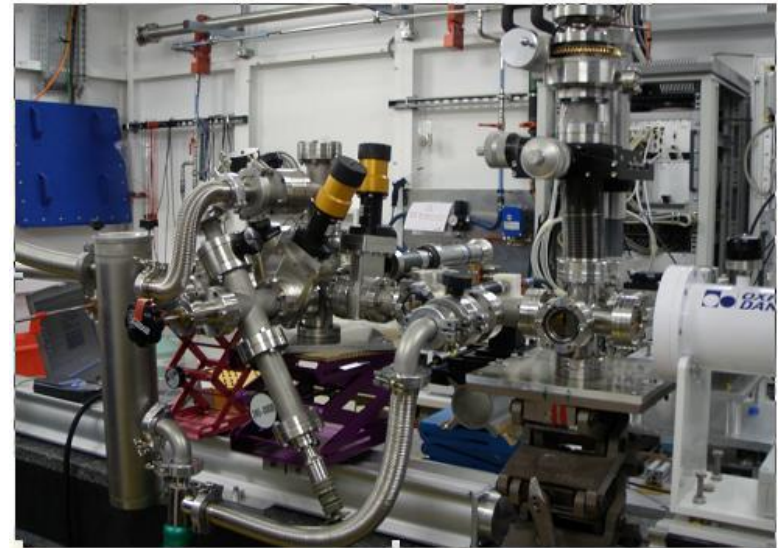
Key part to play in our role as a synchrotron technology nursery



ICEPAPS: “THE ULTIMATE MOTOR CONTROLLER”

- Developed at the ESRF
- Optimised for high resolution position applications
- Semi-open collaborative hardware model:
 - Common core developments
 - Tenders for supply
 - ESRF provision to non-members

A light source
has ~10,000
motor axes





- Collaborative development amongst light sources
 - ESRF core driver
- Open source
- Already multi-million Euro market in supporting TANGO at RIs and supply of TANGO-ready hardware

Exploration for deeper industrial exploitation
with local incubator support





WORKING WITH OTHER EIROS



NANO ELEC. - Chasm Bridging

- With EMBL-Grenoble
- Contract R&D for antibody structure determination
- Used EMBL xtallation facilities and know-how
- Used ESRF beamlines and protein structure know-how
- bioSAXS liquid handler robot
- Licensed to Bruker/Maatel

- With ILL and CEA-LETI, 6.5MEuros
- Core 3FTE team
- Innovation-Led Long Term Proposal with STMicroElectronics for high-throughput electronics characterisation using nano-X-ray beams.
- Investment for routine XRD measurements

 **EUROPEAN SYNCHROTRON RADIATION FACILITY**
* LAÏK - PAUL LANGEVIN * 

Quotation

NAM: _____ Date: 14/02/2014
Orga: ILL
Adm: _____

Quotation N°: DE-1405015

DK-2100 København O
Denmark
Tel.: +45 4649247
Email: gvejens@ibk.ku.dk

Quotation valid until: 3 months after quotation date

Prepared by: Katherine Fletcher

Description	Unit price	Quantity	Line total
ESRF (ID02 available from July 2014, BM29 available now)			
ID02 - 1 shift (8 hrs) beam time: member countries	3 600.00 EUR	1	3 600.00 EUR
BM29 - 2 shifts (16 hrs) beam time: member countries	3 600.00 EUR	2	7 200.00 EUR
ILL (available from September 2014)			
D11 and/or D22 - 3 shifts (24 hrs)* beam time	6 000.00 EUR	3	18 000.00 EUR
* Given the feasibility nature of the neutron work, ILL exceptionally offers 3 shifts at no charge for purchasing a minimum of 3 shifts.			
Subtotal			28 800.00 EUR
VAT (N/A)			
TOTAL			28 800.00 EUR

Payment: Bank transfer in Euros (€) within 30 days of the invoice date.

General Terms and Conditions and NEXT STEPS:

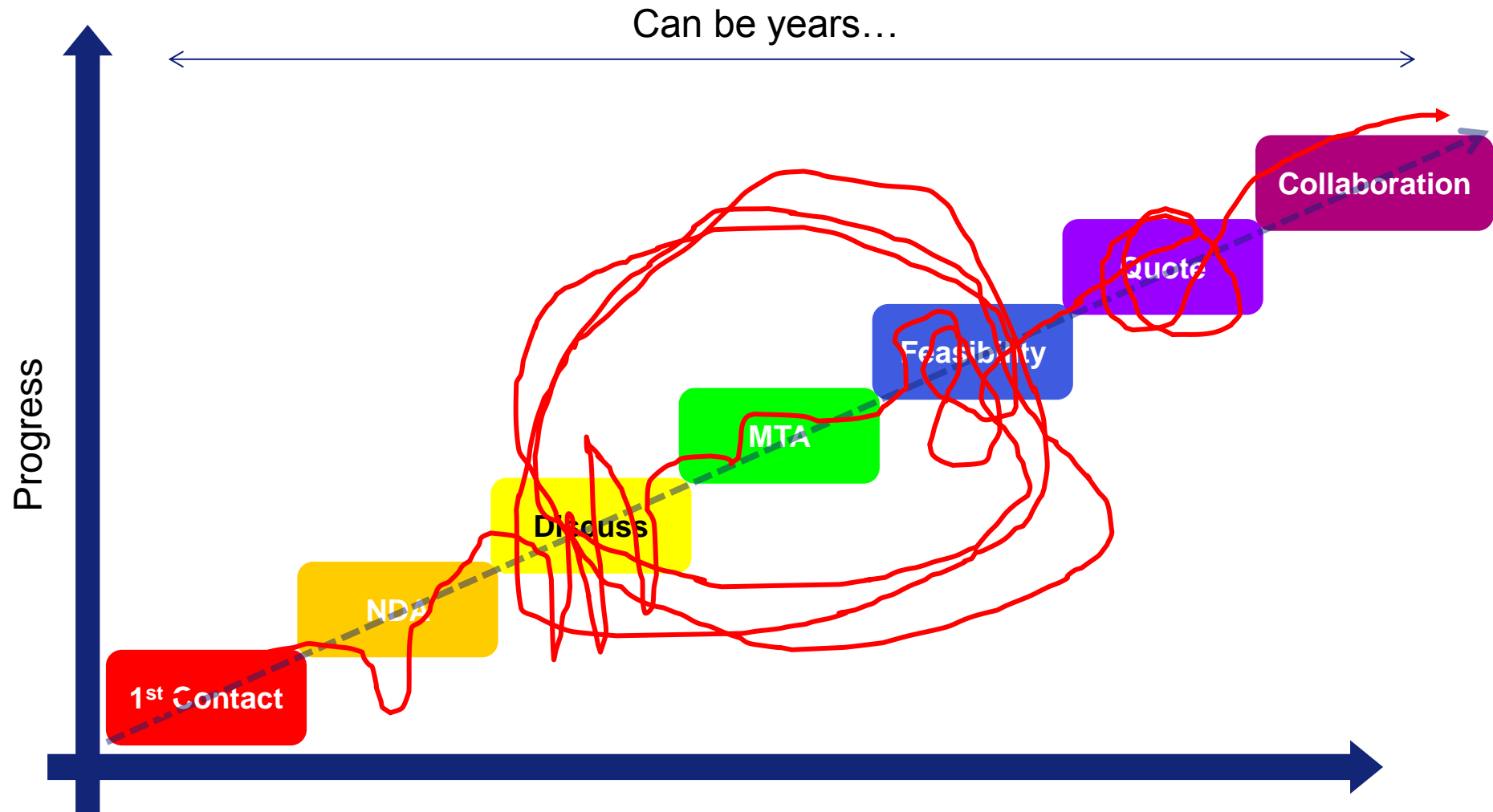
- The present quotation is ruled by the "General Terms and Conditions" (the "Terms"), which have been provided to you, attached.
- Should you accept the Terms and quotation, please complete, sign and send the attached "Agreement for the Industrial Use of ESRF and ILL Facilities" (the "Agreement") by email to industry@esrf.fr.
- No work / delivery will be carried out without receipt of the completed and signed Agreement as well as a written purchase order.
- Please consult with our scientific contacts at below before returning the Agreement, in order to decide which data collections and analyses would be most suited to your samples.
- Please contact to fix a date for the experiment(s) and for further information of a technical nature:
ID02: Dr. Michael SZTUCKI tel. +33 (0)4 76 88 28 93, or email at m.szucki@esrf.fr
BM29: Dr. Delphine MONAGNO tel. +33 (0)4 76 88 20 84 / Dr. Emilie FOLDEVIGNE tel. +33 (0)4 76 88 24 77 or by email at emilie.foldevigne@esrf.fr
D11: Dr. Peter Lindner tel. +33 (0)4 76 20 71 80/70 33 or email at plindner@ill.eu
D22: Dr. Lionel Flavel tel. +33 (0)4 76 20 70 25 or email at pfavel@ill.eu

Edward MITCHELL
ESRF, Head of Business Development

Jérôme BEAUCOUR
ILL, Head of Industrial Liaison Unit

If you have any questions concerning this quotation, please contact Katherine FLETCHER, Business Development Administrator, by telephone at +33 (0)4 76 88 20 31 or e-mail at industry@esrf.fr

COURTING INDUSTRY



Pulling in industry: increasing deeper interaction
(after Markus Nordberg, CERN)

ADOPTION AND APPROBATION BY INDUSTRY



Thank you for your attention.