EUROCC ITALY
HPC Competence Center

Original ways to engage with industry

5th Dos & Donts

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27 nov 2024

3 TOOLS

01

Examples

- *What can a company do with HPC?*
- Database of Proof of Concepts from Cascade Funding projects

02

Opportunity

- *What are the opportunities for a company if it uses an HPC?*
- Flyer basic level that describes what a supercomputer is and what are the opportunities

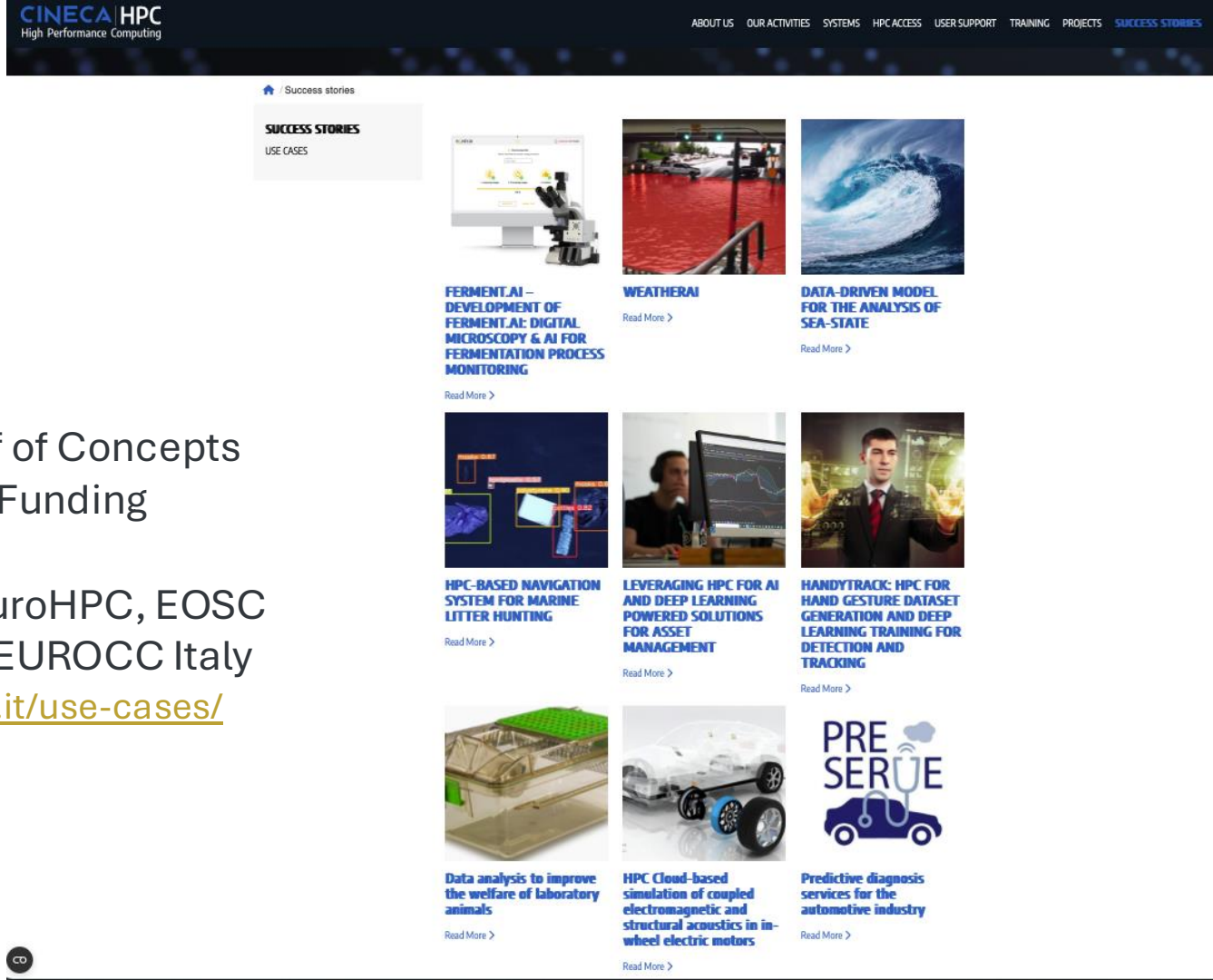
03

Use cases

- *What happens after the project with the HPC is finished?*
- Flyer/Web page describing the journey of a startup that, thanks to European project, has innovated its technological platform.

1) EXAMPLE

- Database of 180 Proof of Concepts (PoCs) from Cascade Funding projects
- Fortissimo(1,2), FF4EuroHPC, EOSC DIH, EUHUBS4DATA, EUROCC Italy
- https://www.hpc.cineca.it/use-cases/



1) EXAMPLE

- For each Proof of Concept (PoC), we have summarized the extensive information found on the project page to provide concise and relevant insights.
- The information gives the company a clear overview of the project and makes it easy to compare the different PoCs.
- For further details, a link to the project page is provided

/ Success stories / Cloud-based design of motorcycle...

SUCCESS STORIES

USE CASES

Moxoff in partnership with Nolan developed a dedicated multiphysics platform, CASCo, to support the simulation motorcycle helmets characteristics. This project aims to develop CASCo further to use Cloud-based HPC and enable engineers to perform analysis in a simple way and with a shorter turnround time.

Start date: 01/07/2013

Duration in months: 18

Problem Description

The objective of this experiment is to develop CASCo further to use Cloud-based HPC and to enable Nolan engineers to perform advanced multiphysics simulations in a simple way and with a shorter turnround time. Simulations involves: external aerodynamics, thermal effects, acoustics, and impacts.

Goals

New services

Challenges

The aim of this experiment is to enable advanced and fine detail simulations with feasible runtimes through the use of HPC via the CASCo platform. A further aim is to enable these simulations to be performed without a deep knowledge of the underlying physics and mathematics to enable the focus to be on design.

Innovation results

The CASCo Multiphysics platform has been ported to an HPC system,involving the enhancement of GUIs, workflows and file formats, and the development of the interface with an HPC scheduler system. Similarly, post-processing has been optimised and moved to HPC infrastructure to reduce processing time.

Business impact

MoxOff forecasts that the platform will increase its turnover by 10%. Nolan estimates an helemt development cost saving of 52k€. This experiment comprises a success story for CINECA, that is estimated to bring new SME customers, creating an approximate 5% increase in commercial revenues.

Project page

Follow the external link

2) OPPORTUNITY

- Flyers in Italian to reach all companies (especially SMEs)
- Simple descriptions for non-technical staff
- The goal is to make people curious enough to ask themselves if HPC can be useful

CINECA

HPC & INDUSTRIA

UNA COMBINAZIONE VINCENTE

Cos'è un supercomputer?

Il calcolo ad alte prestazioni, o High Performance Computing (HPC) è una tecnologia basata sui supercomputer che permette di portare la digitalizzazione dell'azienda oltre i confini. Un supercomputer è composto da molti server che lavorano in parallelo su un unico problema per velocizzarne la soluzione e la sua enorme capacità di memoria permette di digitalizzare qualsiasi processo o prototipo. Quindi un supercomputer può dare soluzioni a problemi complessi in tempi molto brevi.

In Italia Cineca mette a disposizione della ricerca scientifica e dell'innovazione industriale Leonardo, il 4° supercomputer più potente al mondo.

A cosa serve in azienda?

Sviluppare un nuovo prodotto richiede indagare diversi materiali, geometrie, o processi produttivi. Un supercomputer può aiutare a selezionarli, simulando il prodotto con tutti i parametri che servono. In questo modo, un'azienda può scegliere i modelli più promettenti per i test finali con prototipi fisici, riducendo tempi e costi.

Sempre più aziende hanno a disposizione grandi moli di dati da cui estrarre valore e supportare le scelte di business. Un supercomputer può allenare gli algoritmi di intelligenza artificiale e supportare il management dell'azienda.

Come può migliorare il business?

Un supercomputer è estremamente efficace in quattro ambiti:

TAGLIO DEI COSTI CONSISTENTE

AUMENTO DELLA PRODUTTIVITÀ

TIME TO MARKET RIDOTTO

APPLICAZIONI PIÙ PERFORMANTI

Il risultato, grazie alla **digitalizzazione** di processi e prodotti e alla **velocizzazione** degli algoritmi, è un vantaggio strategico insostituibile, che rinforza la competitività, permettendo di immettere i prodotti sul mercato **prima dei concorrenti**, il tutto **abbattendo le spese** di sviluppo, **aumentando la produttività** e **migliorando la qualità complessiva** della produzione.

WWW.CINECA.IT

Come accedervi?

Leonardo è un supercalcolatore co-finanziato dalla comunità europea attraverso l'iniziativa EUROHPC, dal Ministero italiano dell'Università e della Ricerca e altri partner nazionali e internazionali riuniti nel consorzio Leonardo.

Le industrie italiane hanno due possibili vie d'accesso alle risorse di calcolo: una a livello europeo e una a livello nazionale.

Quella europea avviene tramite open access peer review oppure tramite progetti di innovazione cofinanziati dai programmi Horizon Europe o Digital Europe.

L'accesso a livello nazionale può avvenire tramite bandi di progetti finanziati dal Governo Italiano oppure tramite un servizio a valore gestito da Cineca.

Le proposte per partecipare a una call generalmente sono composte da tre parti: la descrizione del problema che si vuole risolvere, la soluzione che si vuole implementare corredata da giustificazione tecnica e piano di lavoro, l'impatto che avranno i risultati del progetto sul business.

Partecipare a una call è processo relativamente semplice, per il quale Cineca può dare un supporto efficace.

Quali competenze servono per usarlo?

Utilizzare un supercomputer è semplic quasi come utilizzare un normale laptop m richiede una formazione di base per farl Per questo organizziamo corsi aperti a tutt le aziende e ad hoc su tecnologi specifiche. Durante lo svolgimento de progetto, la nostra squadra affiancherà team aziendale affinché possa acquisir tutte le competenze necessarie.

E le altre aziende?

Molte aziende di diversi settori hanno gi tratto vantaggio dal supercalcolo:

- **Prototipazione virtuale su u supercalcolatore:** una PMI che progett motori in-wheel risparmia 120k€ per ann nel processo di sviluppo/progettazione.
- **Realizzazione di una piattaform innovativa:** una startup fintech è riuscita scalare il training dei suoi modelli AI dall workstation dell'ufficio ai supercompute in modo flessibile.
- **Ricerche di innovazione e ottimizzazione del processo o del prodotto:** una PMI che opera nel settore ambientale riesce a mappare l'inquinamento atmosferico urbano con una risoluzione senza precedenti.

3) USE CASE

- The goal of the flyer/web page is to show the benefits that the adoption of HPC has given to a company.
- Axyon is a startup that works in the Fintech sector that through European projects has made its infrastructure scalable.
- https://euroccitaly.it/en/case-histories-en/axyon-ai-algorithms-for-the-asset-management-industry/

3) USE CASE

The projects developed by Axyon AI

2019

Project: Shape

Programme: PRACE, Partnership for Advanced Computing in Europe

The project enhanced the Axyon AI Platform, improving scalability and performance for managing ML tasks across varied computational resources, and ensuring data security and compliance for fintech applications. This upgrade supports more efficient handling of large-scale data processing in finance.

ROI = 100*(Net Return / Cost) of Investment = 140%

2020

Project: Esax

Programme: EOSC DIH Digital Innovation Hub

The Axyon AI Platform, powered by an automatic meta-optimization engine, performs parallel deep-learning jobs, requiring a week per cycle on a small GPU cluster. With ESAX integration, scalability and efficiency have increased, enabling the platform to handle larger datasets and more complex financial models, including varied assets and sentiment data.

ROI = 100*(Net Return / Cost) of Investment = 150%

2021

Project: AI/Deep learning-based software for time series application

Programme: EuroCC Italy

This project provided a significant opportunity to access advanced computational resources and expertise by collaborating with Leonardo Spa. This access enhanced Axyon AI's capabilities in financial analytics by enabling more sophisticated data processing and modelling techniques.

ROI = 100*(Net Return / Cost) of Investment = N.A.

2021

Project: Leveraging HPC for AI and DL powered solutions for asset management

Programme: FF4 EuroHPC

This project developed an AI-based platform to enhance asset management, automating investment models and creating risk management tools to stabilise markets. It expanded investment strategy support from 100 to over 1,000 financial assets and integrated continual learning to improve adaptiveness and reduce re-training times.

ROI = 100*(Net Return / Cost) of Investment = 180%

Axyon AI has strategically integrated **CINECA**'s HPC infrastructures into its core operations to meet the demanding computational requirements of its advanced AI and deep learning models. This integration has been pivotal in managing the immense data volumes and complex computations that these models entail. By employing HPC, **Axyon AI** could significantly accelerate its model training processes and enhance the precision of asset performance forecasts.

Enhancing deep learning models through HPC

Starting in 2019, Axyon AI developed several innovation projects based on the use of HPC infrastructure, which were implemented within various European programs designed to put HPC infrastructure at the service of research and enterprise. The gradual implementation of HPC across the projects has consistently yielded a high return on investment, demonstrating the value and effectiveness of integrating advanced computational technologies in enhancing business operations and financial strategies.

The added value for Axyon AI

The implementation of High-Performance Computing (HPC) posed challenges but also enhanced Axyon AI's platform significantly, providing substantial growth opportunities. Through the collaboration with CINECA, Axyon AI has achieved several key enhancements:

1. **Enhanced Analytical Capabilities:**
   Processing of vast datasets and complex calculations, enhancing predictive accuracy and insights in financial markets and giving asset managers a competitive edge.
2. **Innovation Acceleration:**
   HPC accelerated innovation cycles, allowing for rapid development, testing, and deployment of new AI models, enhancing responsiveness to market changes.
3. **Scalability and Performance:**
   Efficient operations scalability to manage more clients and larger datasets without sacrificing performance.
4. **Cost Efficiency:**
   Optimization of computational processes led to significant cost savings in data processing and model training, enhancing the cost-effectiveness of Axyon AI's solutions.
5. **Risk Management:**
   HPC enabled more sophisticated risk analysis models, providing tools for better informed, data-driven decision-making in a volatile market.

These advancements have solidified Axyon AI's position as a leader in AI-driven investment solutions, leveraging HPC to add significant value across various aspects of its operations.

CONCLUSION

- The idea was to create different types of tools for engaging companies, to make them curious and bring them closer to the world of HPC
- The tools produced are (also) available digitally in PDF format, but the flyers can also be used in events such as fairs and conferences.
- Having a catchy format and responding to different types of needs (and questions), we hope that these new tools will help EUROCC ITALY (and its partners) to increase the number of engagements with companies.

THANK YOU

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This project has received co-funding from the European High-Performance Computing Joint Undertaking (JU) under grant agreement No 101101903. The JU receives support from the Digital Europe Programme and Germany, Bulgaria, Austria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Ireland, Italy, Lithuania, Latvia, Poland, Portugal, Romania, Slovenia, Spain, Sweden, France, Netherlands, Belgium, Luxembourg, Slovakia, Norway, Türkiye, Republic of North Macedonia, Iceland, Montenegro, Serbia

Dos and Don'ts for EuroCC2 Industry Champions

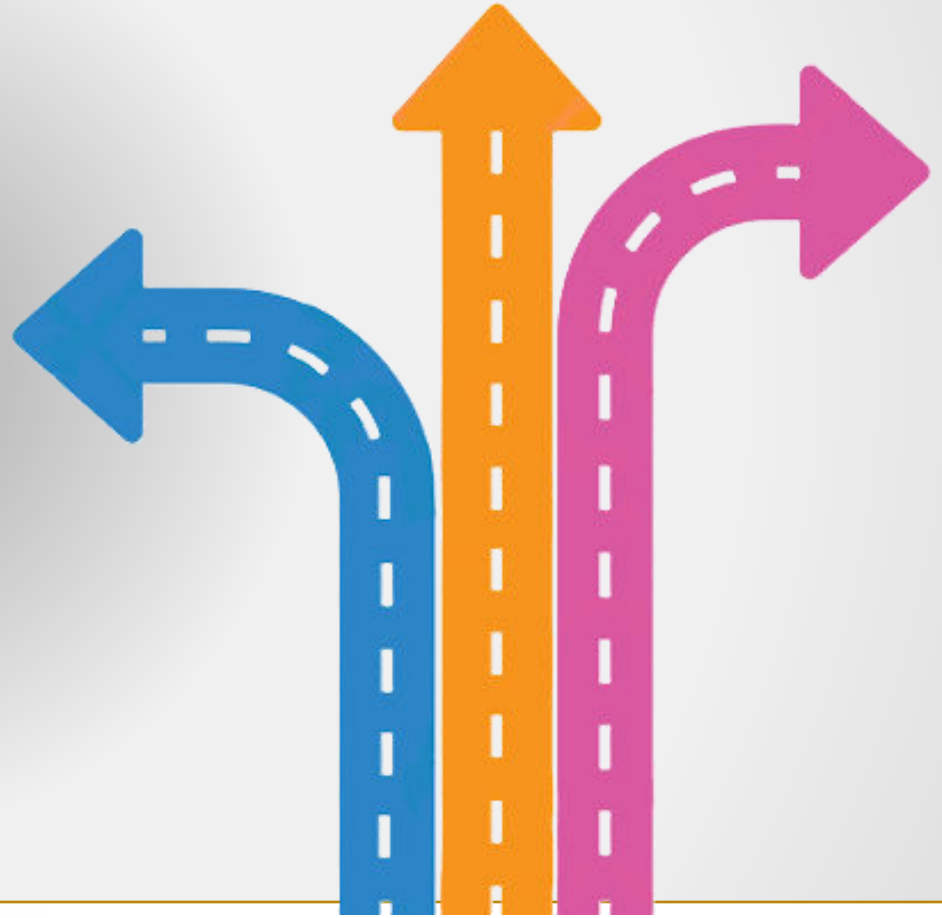
NCC Cyprus

Dr Panayiota Katsamba
Managing Coordinator, Industrial & Cross-Disciplinary Research Collaborations
Computation-based Science & Technology Research Centre, The Cyprus Institute

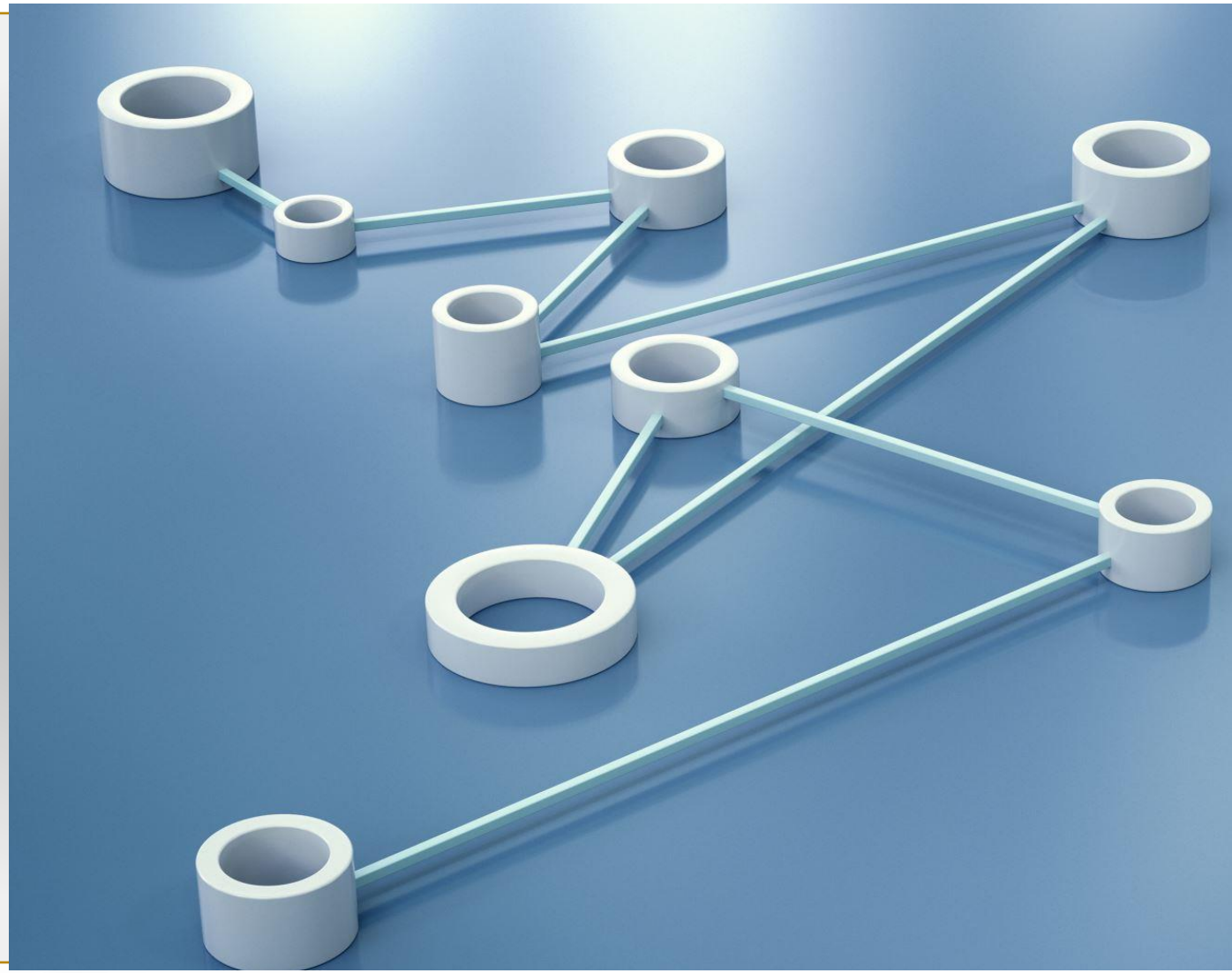
Scaling up

Approaches in multi-stakeholder engagement

- ✓ Sector-focused Networking Events
- ✓ Industry Days



Leveraging Networking Events



Example

- CEOs Pharmaceutical Industries
- Minister of Health
- Director of the NHS
- Director of Governmental Health Services
- President of Federation of Patients' Associations
- Union of Private Doctors
- Associations of Pharmaceutical Companies
- Clinics

Types of Networking Events

- Sectorial Conferences, eg Energy Conferences, Tech Festivals, Reflect, Researcher's Night, Forums
- EXPOs – visiting booths
- Chamber of Commerce & Industry
- Associations
- Sectorial events by the relevant governmental ministries

Sectorial Mapping

- Do some data analytics/ Read reports on the sector to have an overview
- Check out success stories from EuroCC/EDIH/FF4HPC - these will help you in brainstorming
- Who are the main players in the field? Are they competitors?/ collaborate?
- Do they have an association? In which events can I find them participating in?
- What are the main challenges of that field?

Before & During the Event

- Check agenda, speakers and booth list
- Gain insights from plenaries to kickstart conversations, adapt language
- Coffee break is your networking time:
  - Target specific people or booths– CEO/CTOs
  - Pitch at hand
  - Get insights on strategic priorities. Ask about challenges that you could offer solutions in. Guided requirement sourcing and scoping of synergies.
  - Make sure to exchange business cards, connect on Linkedin, follow-up steps

After the event

- Take notes
  - Register contacts & connect on Linkedin
  - Add notes on synergies for collaboration
- Highlight the most promising ones
  - Impact & alignment with strategic priorities
  - Willingness to collaborate
  - Data available from company & NCCs resources
- Notify your team
- Select and invite companies for an introductory meeting with your team

Networking Interactions & Pitching

Layout

INTRO

Handshake
Introductions
Name, Position, Institution
Card Exchange

LISTEN

their priorities
computational needs & challenges

CRISP INFO

Centre Profile
Know-how
Collaboration opportunities

SYNERGIES

Mini-brainstorming

WRAP-UP

Next-steps

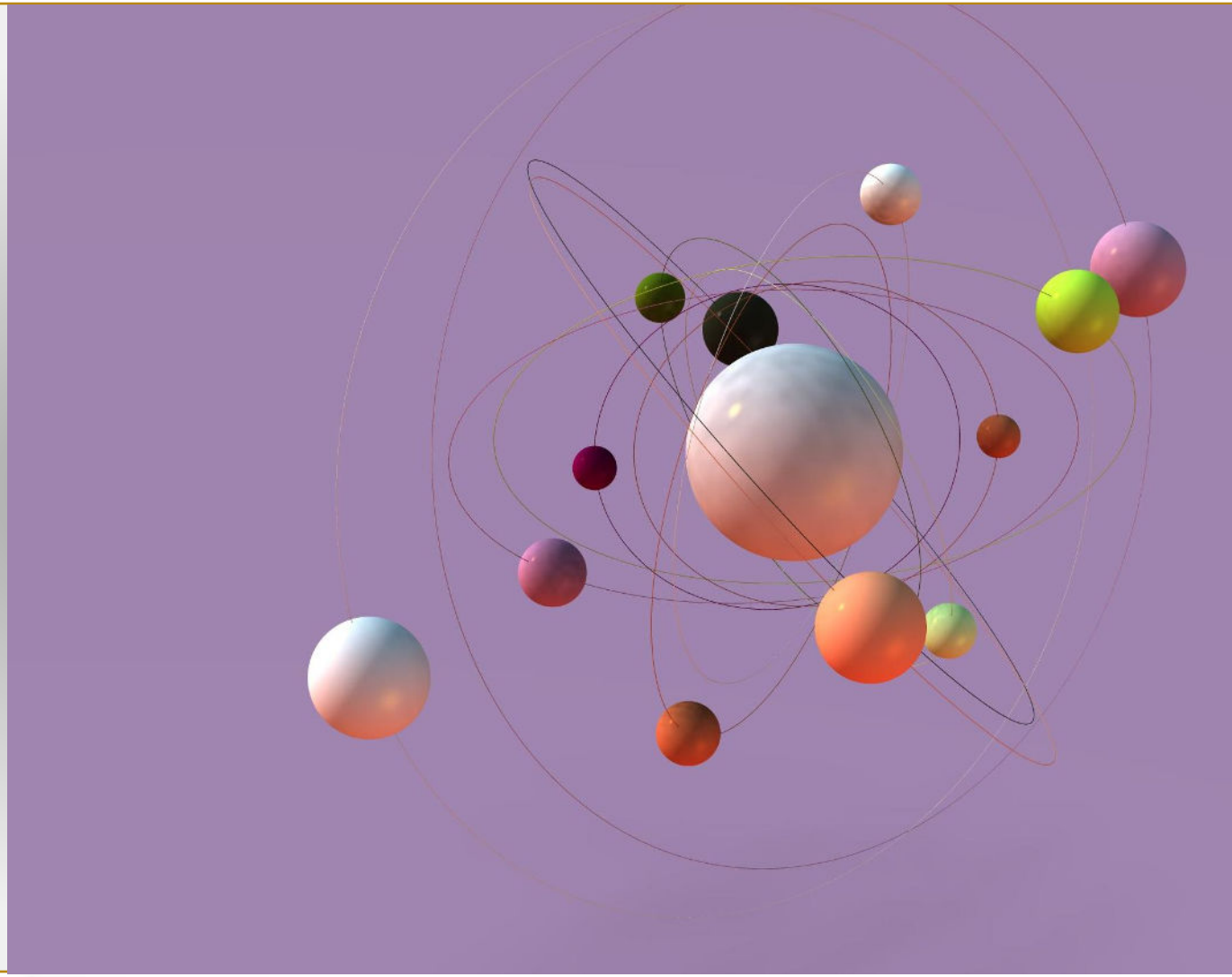
MESSAGE

The kind of expert know-how that I have is crucial in this topic that is of interest you.
I can add value to your business

LISTEN

- They are the focal point!
- Learn their priorities & computational challenges
- Ask questions
  - Do you harness the value of your data?
  - Have your incorporated AI in your workflows?
  - Do you utilise in-silico design?

  (for manufacturing companies)
- Learn



Provide crisp info

- At our NCC, we have top-notch expertise in advanced digital technologies:
  - AI
  - HPDA – Big Data
  - Engineering Simulations & Computational Modelling
  - HPC – be ready to explain to CEOs
- Services & Collaboration Opportunities
  - Consultation
  - Pilot projects
  - Bespoke training

Adaptation is key

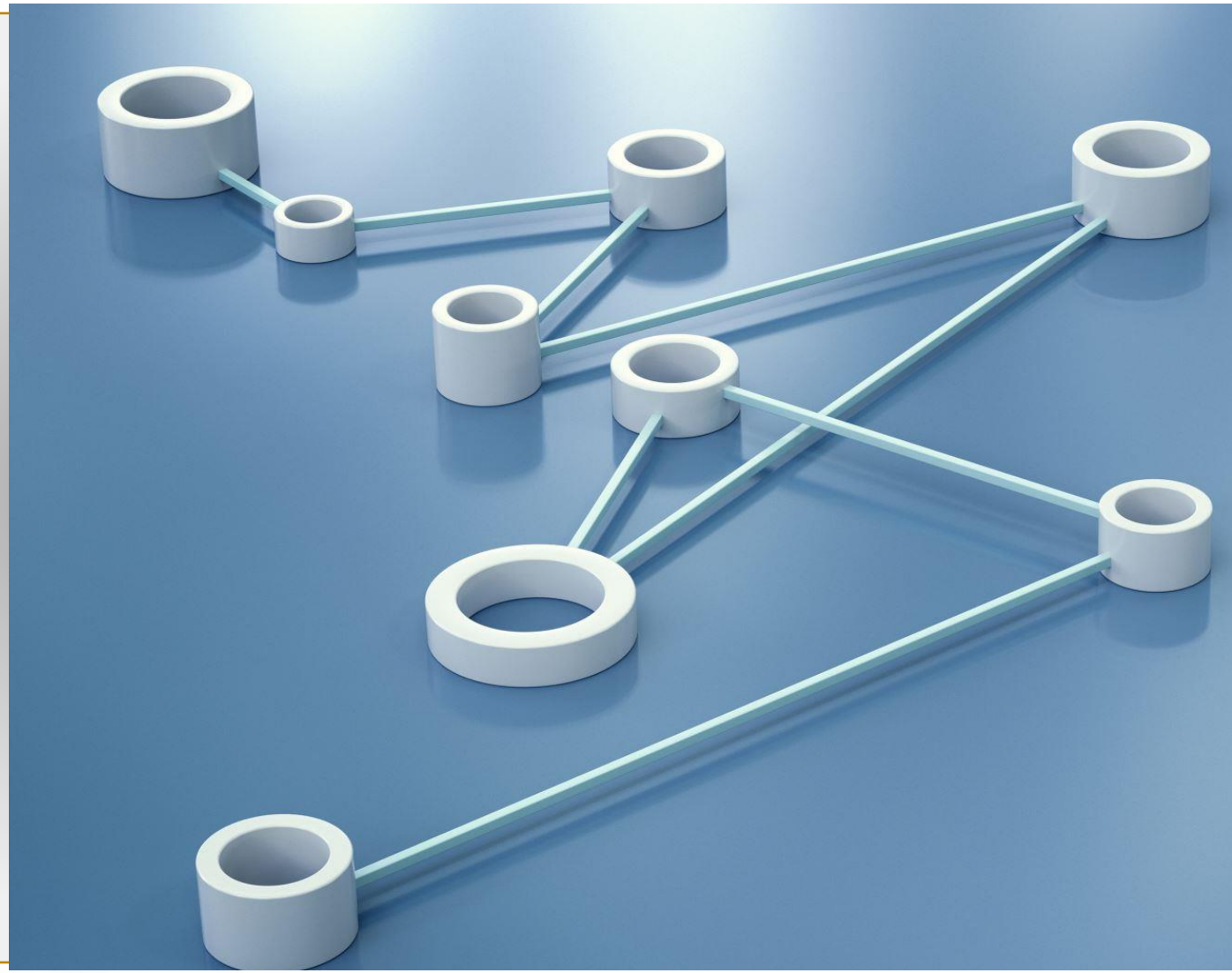
- Who am I talking to?
- Adjust language
  - CEOs/business people: Leverage the buzzwords of eg AI, supercomputing, ease them in, use business language, avoid over-technical jargon
  - CTOs and Technical personnel: Showcase your technical expertise

Dos and Don'ts

- Be friendly and pleasant – this is their coffee break
- Gauge interest
- Don't monopolise people's time
- Be positive
  but don't commit
  on others' behalf!

EURO²

Hosting Industry Days



Industry Day 1

Focused on Larger Enterprises

- Medochemie Ltd. (Pharmaceuticals)
- Photos Photiades Group Ltd. (Beverages and Real Estate)
- C. A. Papaellinas Emporiki Ltd. (Consumer Goods, Retail, and Logistics)
- Charalambides Christis Ltd. (Dairy Products)
- Levantina Fish Ltd. (Aquaculture and Seafood)
- Alion Vegetables & Fruits Co. Ltd. (Agriculture and Fresh Produce)
- Firepro Systems Ltd. (Fire Safety and Security Systems)

MEDOCHEMIE

Photos Photiades Breweries Ltd

EST. 1989 levantina fish

C.A.PAPAELLINAS GROUP

CHARALAMBIDES CHRISTIS

Alion

Industry Day 2

RetailZoom©

Malloc

German Medical Institute

hello radius

EFEVRE TECH
INVENTING TECHNOLOGIES

Suite5
We Deliver Intelligence

ELECTI

MOVING DOORS

ECECT

Vettaky
Specialist Animal Nutrition

NOVATEX
SOLUTIONS.EU

Agenda

- 09:30 - 10:00: Registration - Coffee and snacks
- 10:00 - 10:20 Welcome addresses – Event Objectives
- 10:20 - 10:35 Success story
- 10:35 - 11:45: Short presentations from the companies
- 11:45 - 12:00: Coffee break
- 12:00 - 13:00: Short presentations from NCC staff
- 13:00 - 13:30: Snacks & networking

Success story:

- Testimony from the company itself
- Focused on Impact / Added Value for Company

Short presentations from the companies:

- 5-8 minutes
- Company profile, activities, computational challenges, vision for collaborating with NCC

Short presentations from NCC staff:

- Technology + Relevant Applications
- Purpose: Showcase portfolio

Dos and Don'ts

- Up to 10 companies is more than enough
- Exact number depends on resources available: What's our bandwidth?
- Confirm priority 3-4 speakers early, 2 months in advance
- Communicate clearly the need for a 5-7 minute presentation and request slides to be sent a week earlier
- Avoid hosting competitors on the same event
- Be quick to follow-up!

Thank you

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