NZ Product Accelerator

A model to transform NZ manufacturing industries through Industry-led R/D

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Product Accelerator | introduction

- PA - NZ Govt. funded program though MBIE – under the HTM - a sub-sector of enabling technologies in manufacturing industry
- National program hosted by the UoA and involves multidisciplinary technology platforms
- Network of ~50 researchers engaged with PA in Science- (Chemical, Materials & biological Sc.) /Engineering/modeling & Designing
- PIs drawn from 6 universities + 3 CRIs in NZ

Product Accelerator| background

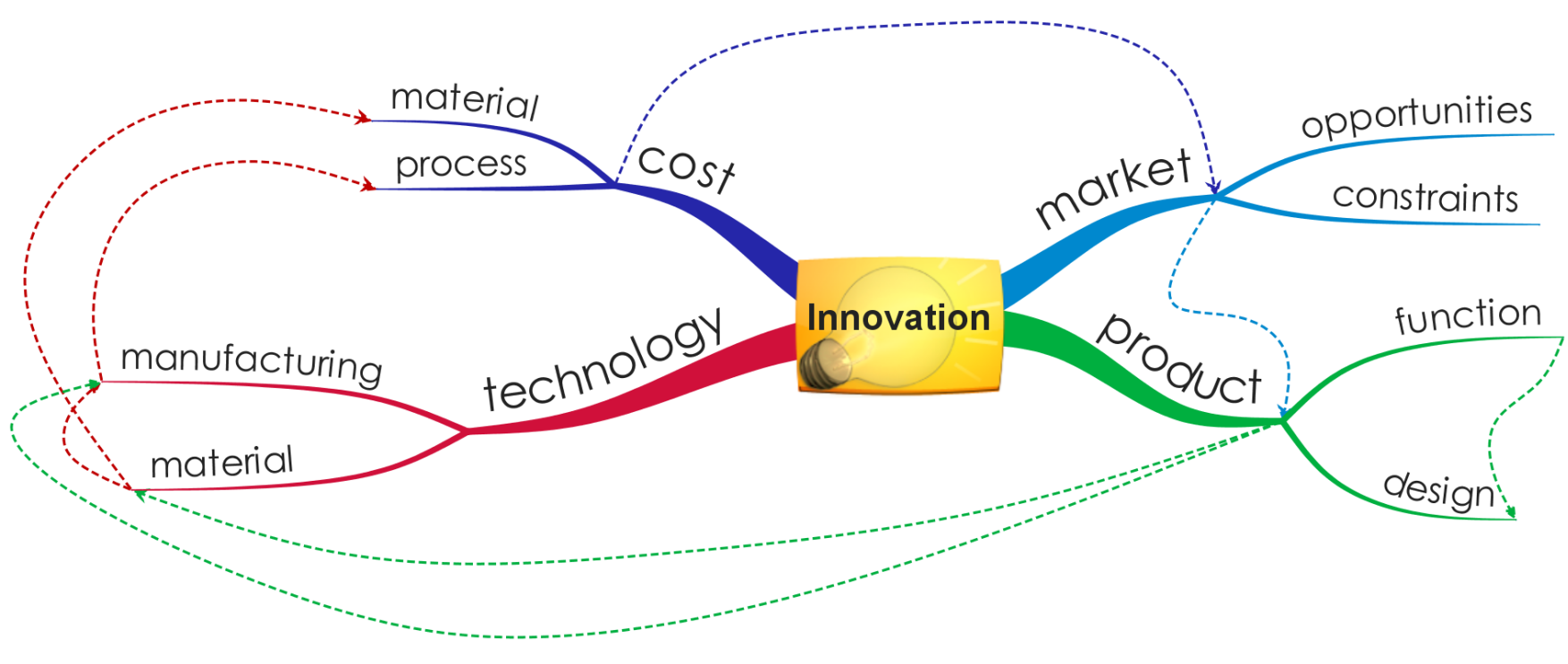
NZMI -SME based economy with a few VILC, Growth - driven by academic R/D

PA model - a low-risk engagement mechanism for SME to provide access to emerging technologies

Large manufacturing companies – moved manufacturing to Asia but R/D retained in NZ. Govt. funding + services engaged in R/D - important sources of revenues for HTMs involved in R/D

NZ Govt. generously funded the PA model to increase export revenues of manufacturing industries engaging public sector R/D institutions

Nonlinear innovation model



Market pull:

Multiple technology options

pulled by

well defined market need

PA Network | Network Partners

Industry -

- Lead Companies – 100+
- Supply chain companies - Technology providers & Process facilitators
- International companies – SL companies + service providers - DSI, RP, LS, RRI, Slintec
- External support – consultants, specialists, in-house R/D support from the industry

  (eg. A case study involving SL–Tech collaborators)

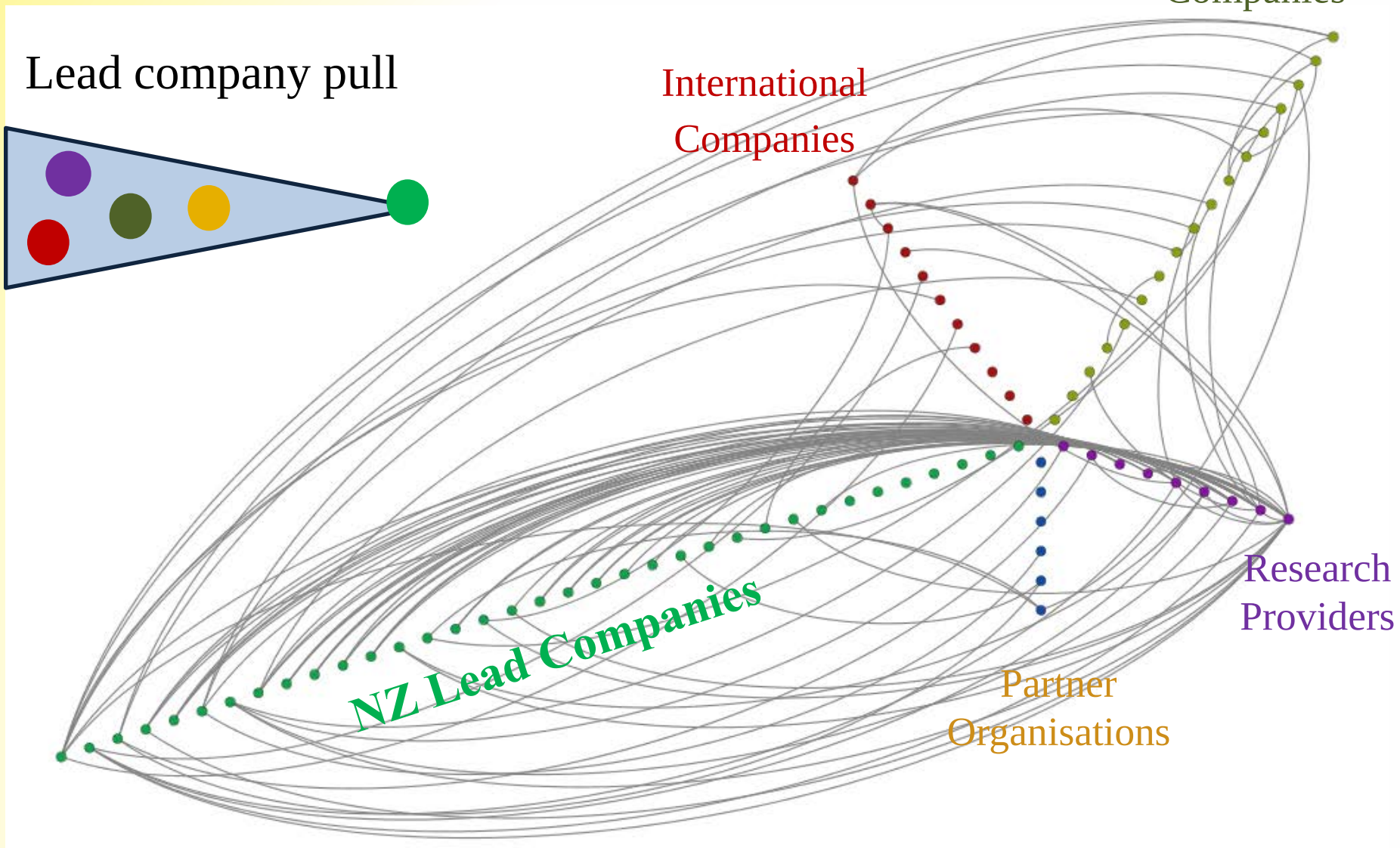
PA Network | Research Partners

Universities – UoA (9 research centers) , AUT, UC, UW, MU, VUW,

CRI - GNS Science, Scion, Callaghan Innovations

PA Engagements | Enabled by Network of Supply Chains

All dots represent a PA engagement (2013)



Product Accelerator | Goals

- Rapid commercialization benefits to companies - lead & supply chain
- One-stop shop - Manufacturing network as one provider of technology, design, processes & materials related innovations
- Open-up pathways to global markets
- Introduce standards, offer testing services through National Testing Register (NTR)*
- Maintain standard in customer relationships through networking events, workshops
- Interaction with Students – industry initiated PhD on FR - funded by PA core budget & IR-PhDs - co-funded by industry– transformational projects
- IP generation, licensing…

PA Industry engagement model through Research | PA Cooperative Research Strategy

Researcher-led

- Must be protected
- Primary source of new concepts
- Can lead to start-ups & licenses
- Investment Committees – connectivity with industry & investors

PA Cooperative Research Strategy

- Establishment of a single creative project team
- Lead company with researchers in various technology disciplines

Joint Technology Planning (JTP)

Industry-led

- Adaptive technologies - Shorter term outcomes
- Consultancies, testing, improving products, processes and designs
- Transformational research –long term projects- IP protected

PUSH from researchers

PULL from companies

Global Market-led

PA targeted

- Multiple paths to Markets
- Engaging supply chain partners, opens up new projects
- Testing services (NTR) – leading to Technology & Industry based projects

GLOBAL MARKET DRIVEN interactive research

PA | JTP – Company Assessment Criteria leading to a JTP

We Can't have all companies going through JTP

Interviewed 200 companies in HTM space that are,

- innovative,
- think strategic on R/D &
- have channels to export markets

Also to see if PA has capability to get engaged

Based on the above,

identified various technology platforms

selected ~ 30 companies to go through JTP

PA | JTP - Joint Technology Planning Process

JTP vital / successful model

- JTP: Brian storming session between the PA -PIs & the company
- Happens after 2-3 scoping meetings with company CEO + PA Team
- JTP invitees: 3 Executives & PA team of 10 researchers (chosen to match core technologies of the company)
- CEO -Shares the core business of the company & PI- R/D capabilities of PA
- Company understands the capability of the network and the network understands the aspirations of the company. And this understanding is very important for both parties to establish a successful engagement

PA| JTP – Project Plan

After the JTP

We select 3-4 are short term projects and 1-2 are transformational projects

PA writes a draft report showing the market impacts for each project

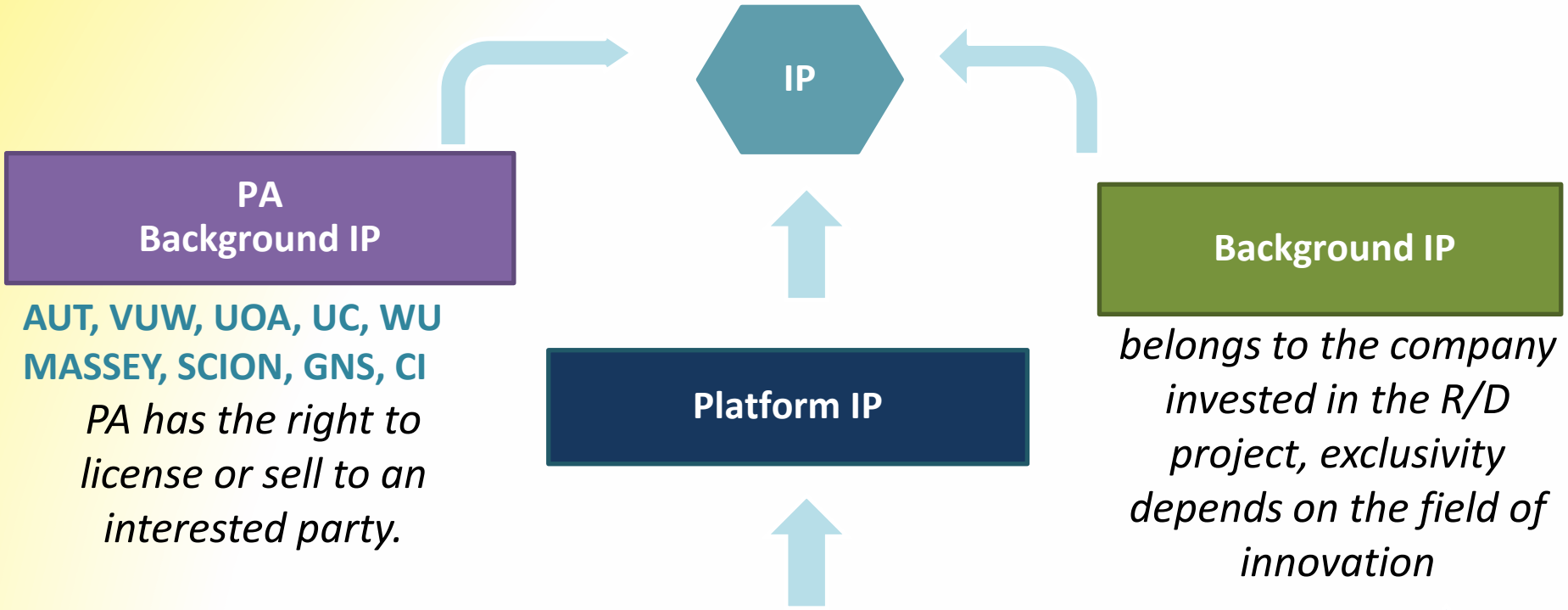
focusing on

- Priority projects with identified tangible benefits to NZ
- Competitive advantage of the technology
- Potential risk management
- Path to markets - supply chain & technology partners, end users etc
- Time to commercialize and achieve milestones

PA –Appoints a Project Director to Manage the projects

How to protect IP | Flexibility to benefit the lead company

One of the main concerns in the industry - Not all IP created is equal



PA has the right to decide to grant the licence to another company that has no conflict of interest with the original innovation. PA negotiate with the lead company whether to offer the technology developed to another company in need of the technology in a completely different area.

Project –Development of Rubber Pylons for Harness Horse Racing Tracks – DSI/ RRI

PA case study

Why we did it

•market need in ANZ for better performing pylons with increased rebound resilience +impact resistance+ durability

•replace poor performing existing plasticized PVC pylons – issue - leaching out plasticizers in service

How we developed it

• selection of a rubber with good impact resistance + rebound resilience to replace plasticized PVC

• opened up opportunities to DSI-SL to collaborate the international technology partner and RRI as the research partner

What is achieved

•successful lab +field trials

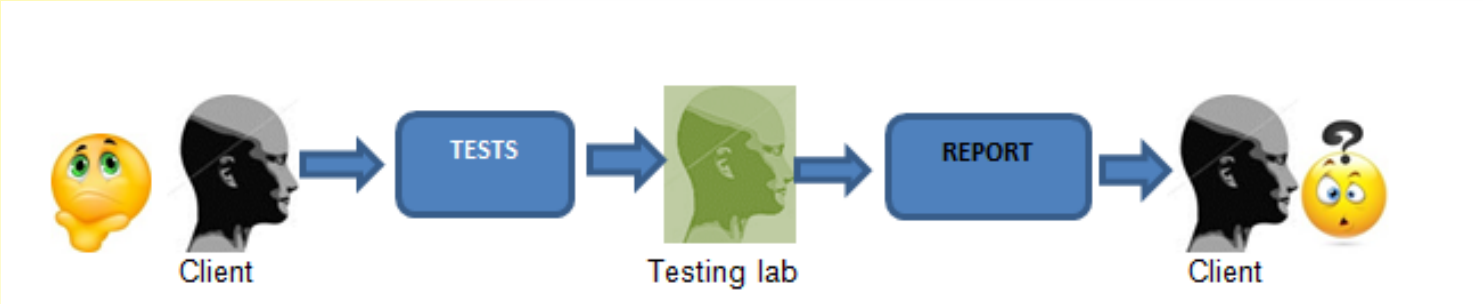
•opened up new markets in NZ and Australia

•excellent feedback from the end users in NZ

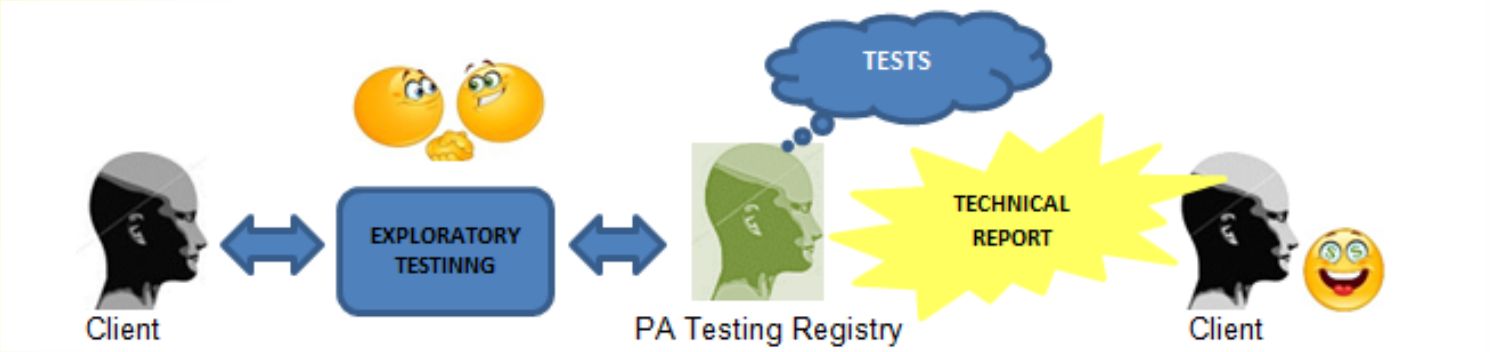
PVC based pylons

PA developed rubber based pylons

Funnel: Establish a National Testing Registry to explore Product needs..



In traditional scripted testing the tests are done as per clients request and a report is issued

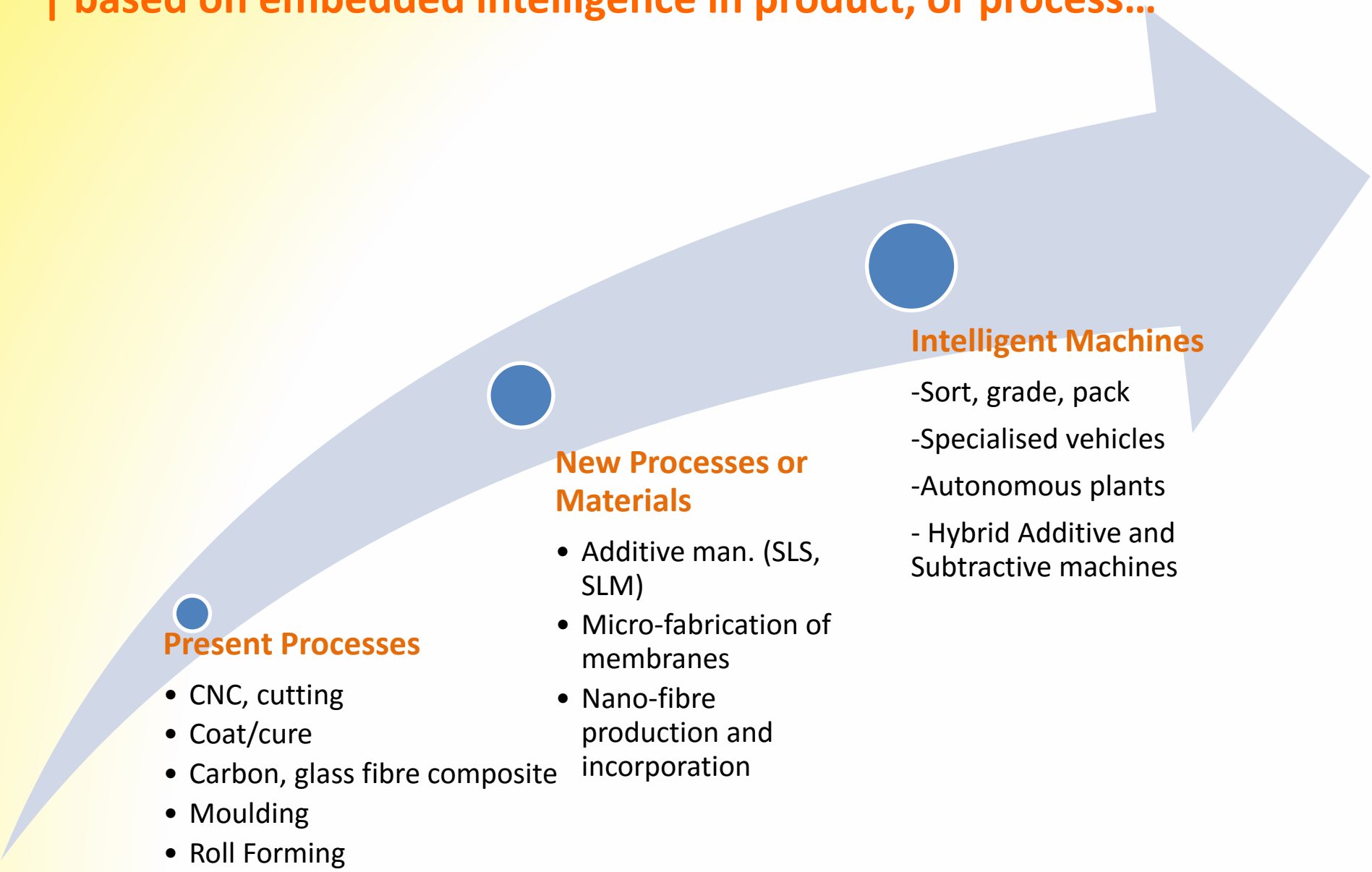


Exploratory testing - planning & designing the testing. We execute the test after discussing with the client to optimize the outcomes

Performance Test of products/processes may not meet Market Expectation → New materials & design ideas & innovative technologies are sought from the Network

Evolution of Manufacturing Technologies (Additive Manufacturing)

| based on embedded intelligence in product, or process…



Present Processes

- CNC, cutting
- Coat/cure
- Carbon, glass fibre composite
- Moulding
- Roll Forming

New Processes or Materials

- Additive man. (SLS, SLM)
- Micro-fabrication of membranes
- Nano-fibre production and incorporation

Intelligent Machines

-Sort, grade, pack

-Specialised vehicles

-Autonomous plants

- Hybrid Additive and Subtractive machines

Company Engagement with PA | Some Barriers in early days

Barriers	Reasons / Issues / Perceptions	Potential PA solutions
Management find it difficult to convince CEO to get involved in R/D	The Boss is under business pressures, he has limited time to get engaged in R/D, lack of awareness of the PA model, dependent on in-house R/D capabilities	PA strategy to engage with the CEO through direct contact JTP engaging experts in multidisciplinary capabilities in Sc & Tech
Perceptions in businesses on universities and CRIs	Industry thinks that public sector R/D has a poor track record in commercializing R&D University /CRI trying to push their research,	PA network built-up lot of confidence over the years

Company Engagement with PA | Some Barriers in early days

Barriers	Reasons / Issues / Perceptions	Potential PA solutions
Companies tend to be innovative in D with less emphasis on R.	Limited resources- people & funds for R -scale up for export markets is difficult, Lack of knowledge in cooperative R&D & risk-free R/D for SME that PA offers	PA offerings - PMs to manage projects, link-up with supply chain to develop prototypes, open up new export markets, flexibility in licensing agreements -staged payments, umbrella contracts
IP Ownership Rights..	Market perception is Universities/CRI's violate IP rights in various ways – e.g. publications, not clear about IP ownership	Acknowledging company background IP. Involvement of Univ. commercial arm (Legal entity) in signing contracts, securing IP generated to benefit the Lead Company but not the R/D institute

Thanks for Listening

and

Best Wishes to SL - SME Innovation Accelerator