



Innovation and User Involvement

MNBS 2014 – LAAS, Toulouse, 21&22 October 2014



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SYMPHONY: Overview

Title Integrated SYStEM based on PHOtonic Microresonators and Microfluidic Components for rapid detectionN of toxins in milk and dairY products

Aim Enable rapid and simple detection of toxins in milk to increase food safety

Why Aflatoxin M1 is present in milk when feed contaminated with Aflatoxin B1 is consumed. Aflatoxin M1 is a potent carcinogen with European limits set using ALARA principle of 50ppt and 25ppt for infant products.

How Photonics, biochemistry and microfluidics integrated in a miniaturised smart system that will perform low cost label free detection of contaminants in milk

Partners



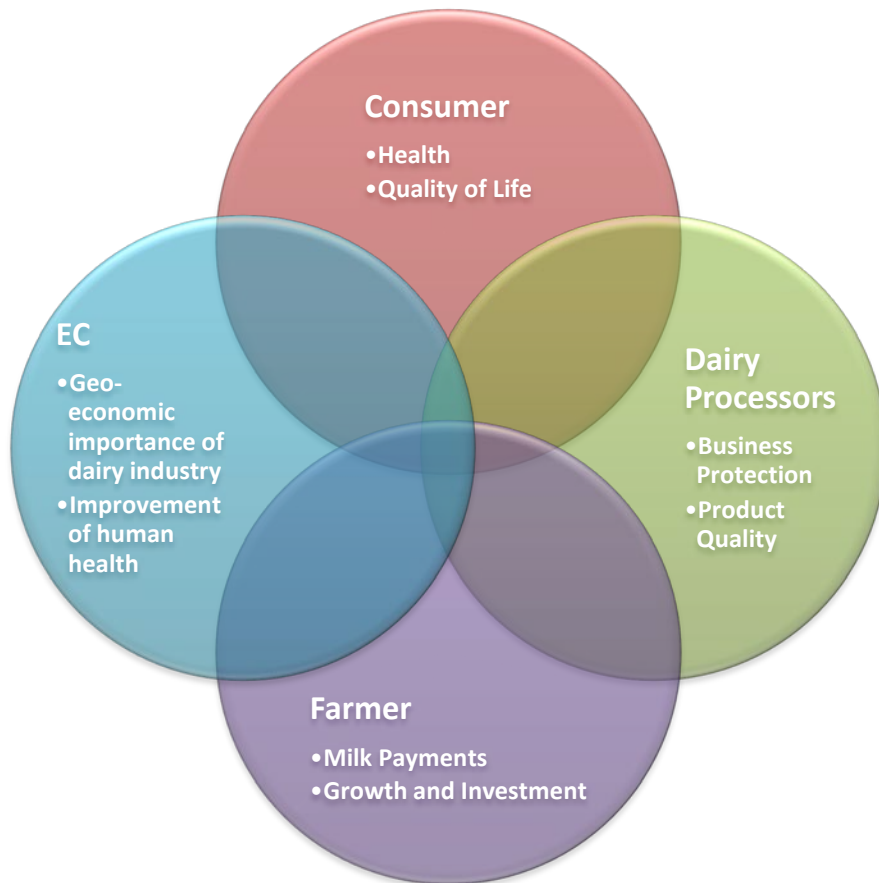
Fondazione Bruno Kessler; Università degli Studi di Trento; Lionix BV; Epigem Ltd; ACREO Swedish ICT, AB; Consorzio dei Caseifici Sociali Trentini; Quadrachem Laboratories Ltd



SYMPHONY: User Needs & Project Aim

Ultimate Aim

- Invent or develop methods to allow 100% of milk to be screened for the presence of a potent carcinogen as well as toxins and contaminants.



Identifying the user(s) and their needs

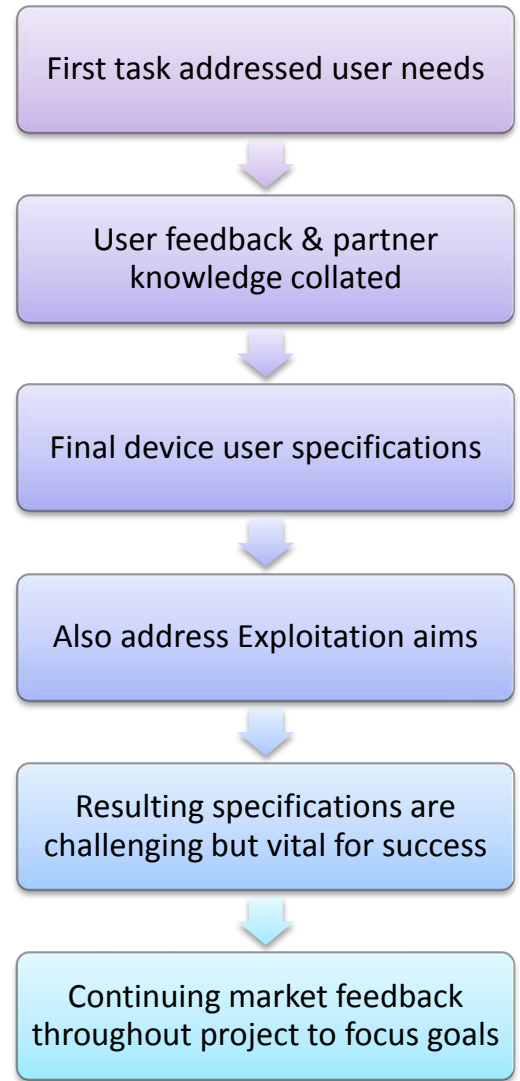
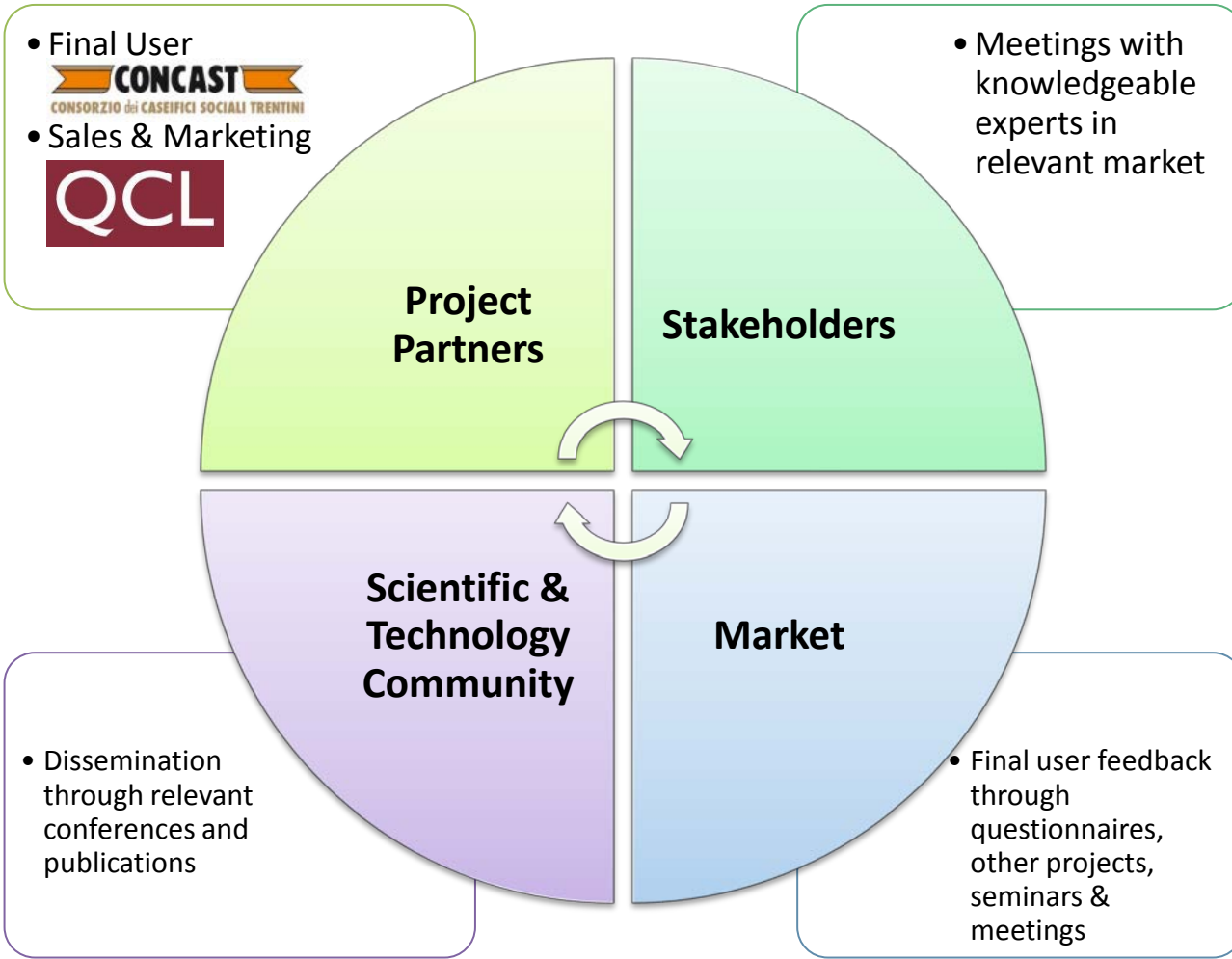
- In a market there are many components
- In the Dairy production supply chain there are Farmers, Collection, Dairy Processors, Point of Sale and Consumers
- To identify the user(s) in a market you need to know the market, talk to the market and anticipate where it is going

Know the Market

- SYMPHONY includes 2 partners connecting aims to users
 - CONCAST is an Italian dairy co-operative
 - QCL is a analytical supplier to the dairy industry



SYMPHONY: User Involvement and Review





SYMPHONY: Technology and Value Chain

MNBS Fabrication Industry

- Development of MNBS business and manufacturing in EC
 - **Microfluidics**
 - **Photonic Sensor Systems**
 - **Bio-functionalised Systems**
 - **MNBS Device Integration**
- Promotion of interdisciplinary R&I activities

Component
Manufacturers



Multi-analyte / cross-
application
development

Industry & Sales

- High market potential for EC and Global sales based on Dairy Industry Need
- Integrating heterogeneous technologies
- Reinforcing European industrial leadership in photonics and MNBS
- Stimulating the innovation of European industry

SYMPHONY
Manufacturer
(Integrator)



Device Manufacture
Market Development

Final User

- SYMPHONY would provide a **UNIQUE** solution to milk contamination testing – limited range of techniques available
- Would provide ability to screen all incoming milk - **HEALTH**
- Explained verbally to endusers in terms of existing dairy lab analysis – Input milk, select test, receive results.

SYMPHONY

Market
Specific
Devices

Market
Specific
Devices

Market
Specific
Devices

Market
Specific
Devices



SYMPHONY: Innovation Process

User needs

Evaluation of market & emerging competition

Definition of target specifications

Development of modules and demonstration

System integration and validation

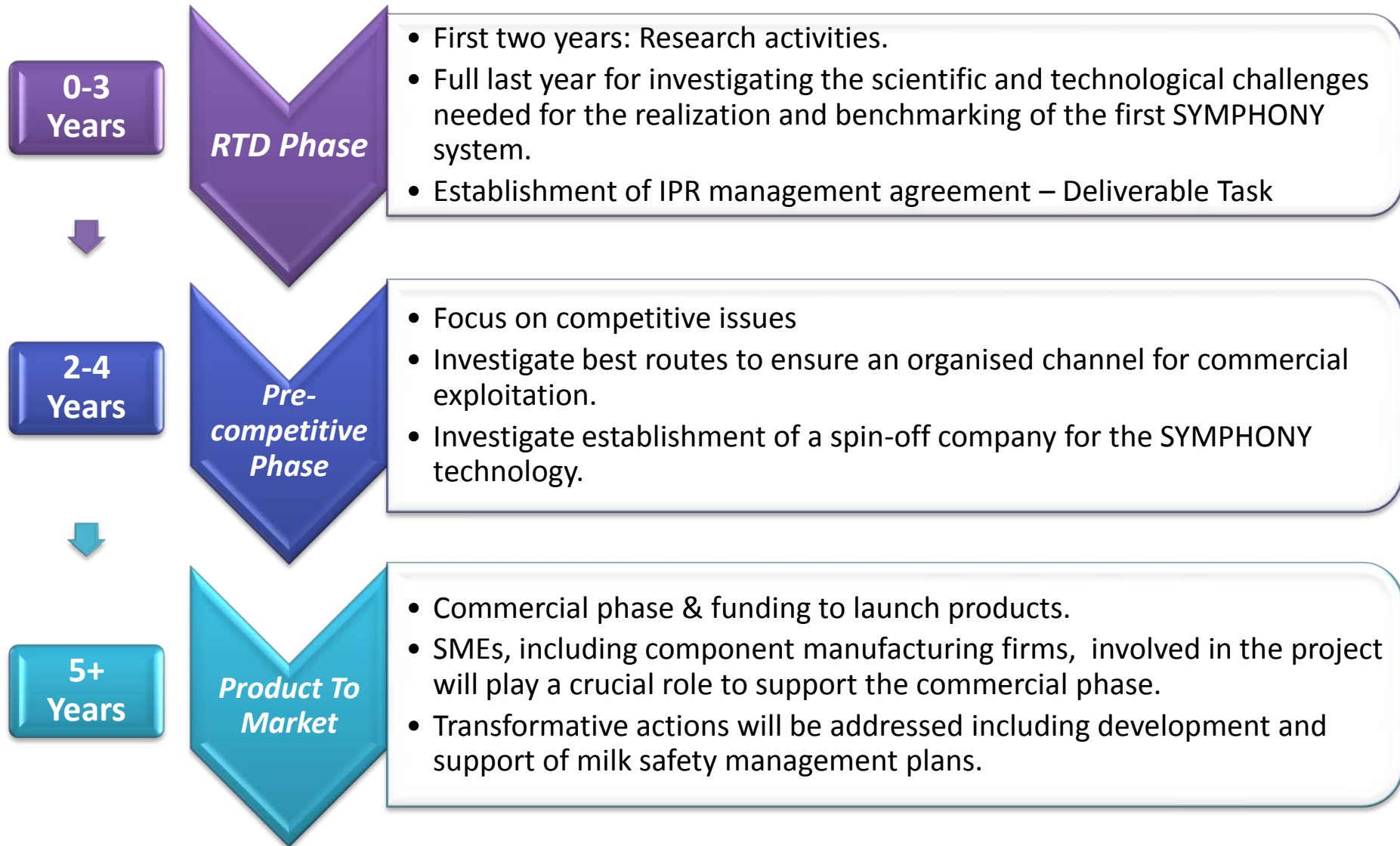
Validation in user setting

Continuous revision of specification and target market to find best exploitation case

Management Board
Steering Committee
Exploitation Committee



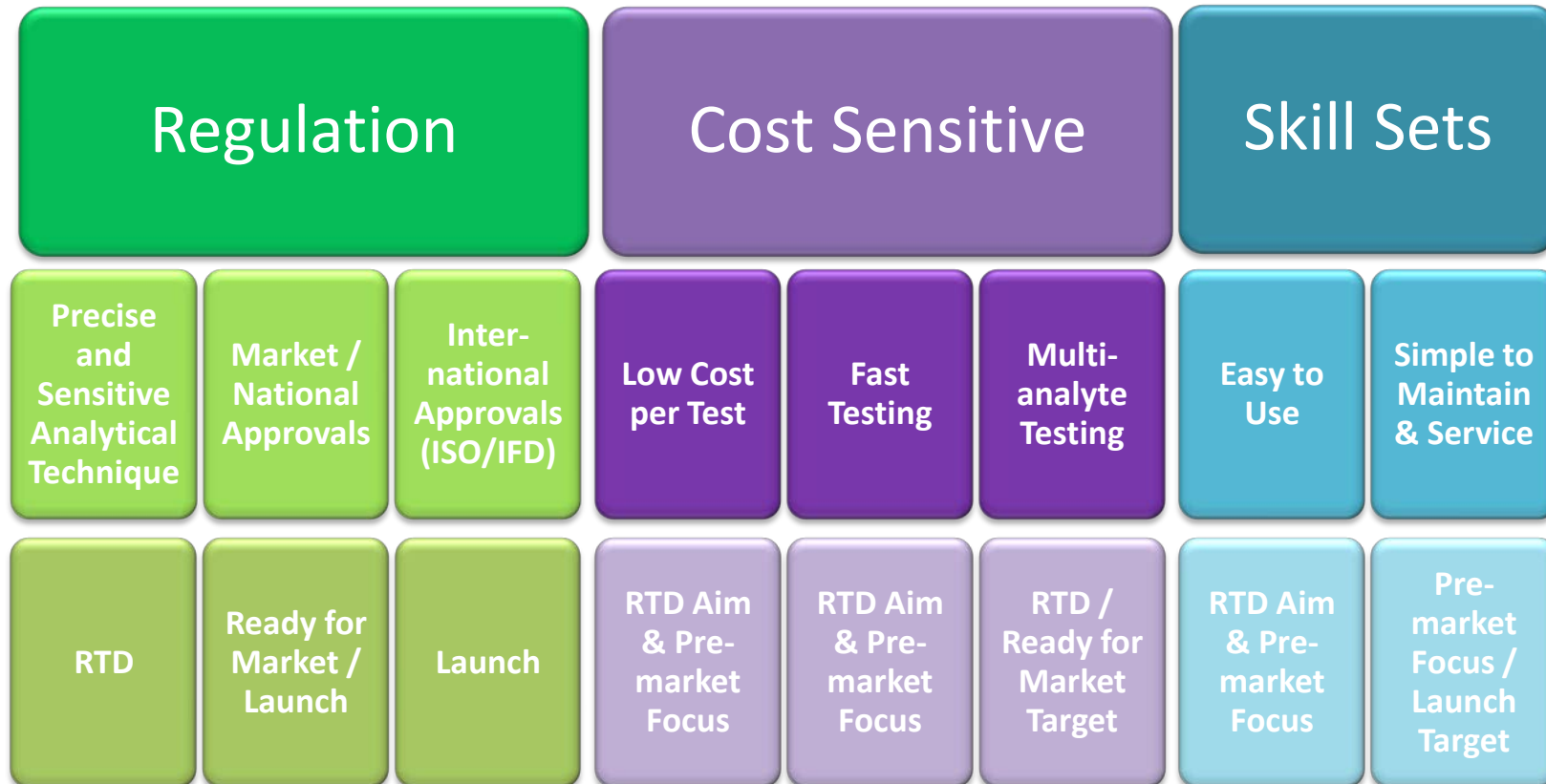
SYMPHONY: Road To Exploitation





SYMPHONY: Road To Exploitation Reasons

Dairy Analysis / Food Safety



User



Market Drivers



Needs



Project Stages

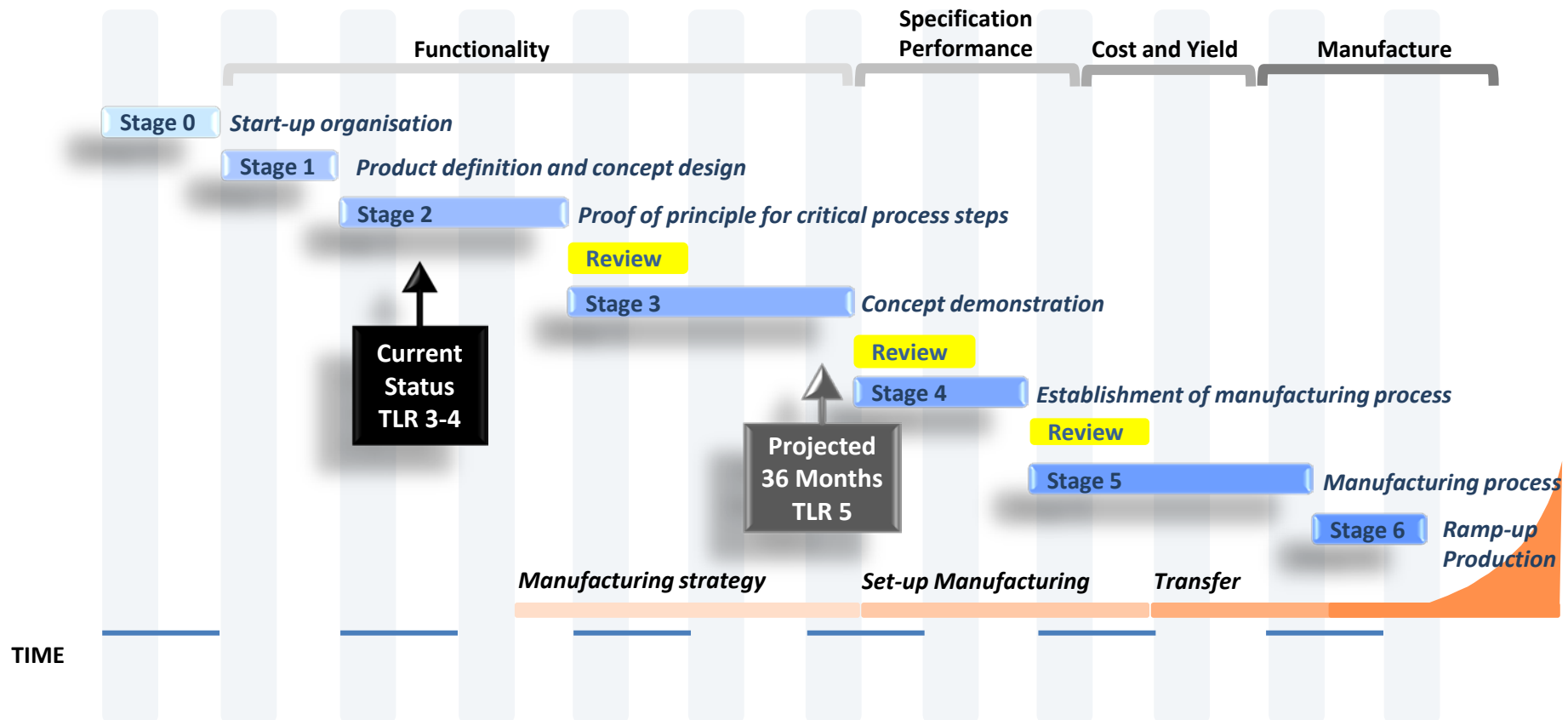


SYMPHONY: Distance to Market

Technology Readiness Level

Project aim to end at **TRL5** - Technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)

Product Research, Development & Production Stages



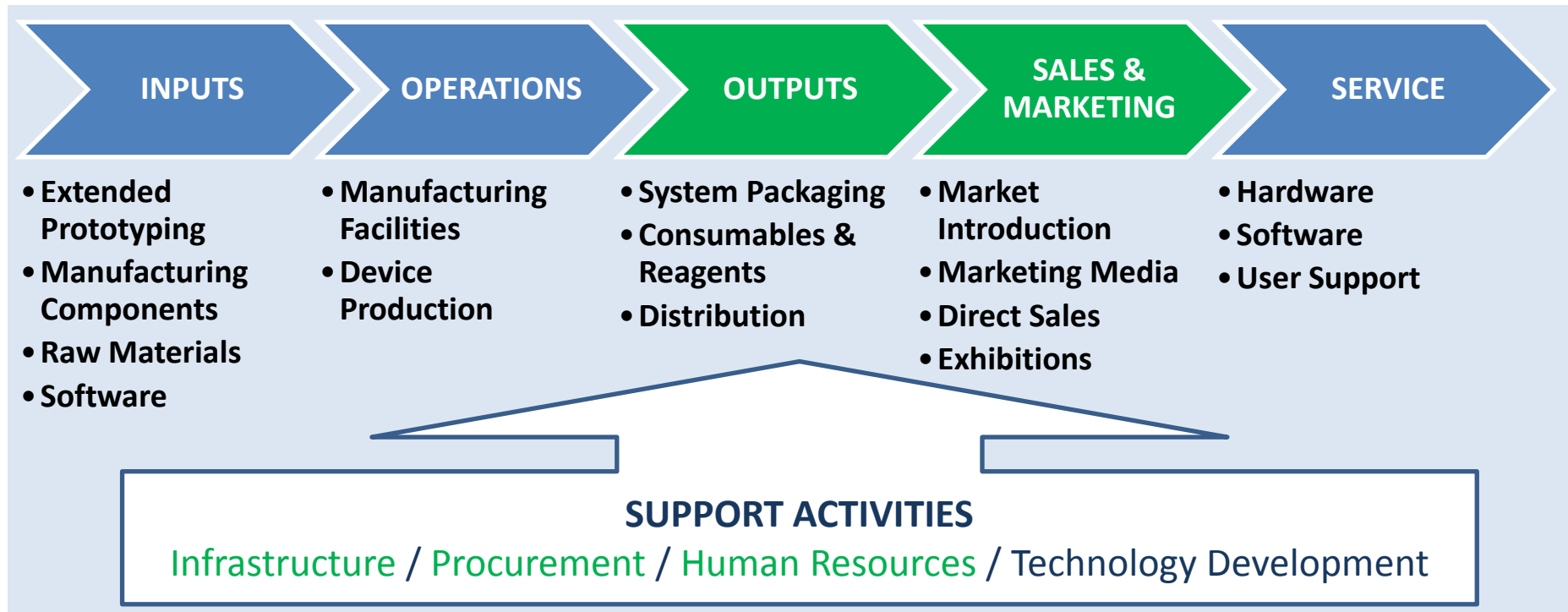


SYMPHONY: Non-Technical Steps to Market

1. Project Exploitation Steps

– IPR / Manufacturing Route / Licensing / Rewards

2. Analysis of Product To Market VALUE CHAIN



3. Value Network Analysis & Business Plan - Month 12, 24 and 36



SYMPHONY: Capital & Time Budget

Concept Prototype

*Development
Optimisation
Software*

Pre-Production Prototype

*Optimisation
Engineering Design
Industrial Design
- Aesthetics
- Branding
- Ergonomics
Tooling*

Manufacturing

Product Value Chain

TIMELINE
BUDGET

12
200

24
400

36
600

48 months
800 € k

To Market

Current projections
are generic estimates
INPUTS:

- COWIN Information
- FP7 MNBS Project
LABONFOIL 5 years / €7m
+ Projected 48 months to
commercialisation
- QCL associated firm
(SIRIUS) develops, designs
and produces analytical
Pharma systems



International Workshop and Summer School on:

MNBS and ICT convergence

Current Research and Future Trends

Chairs

Pietro Siciliano IMM-CNR

Leandro Lorenzelli FBK-CMM

Otranto (Lecce, Italy) 1st week of September 2015 *(to be confirmed)*

