Collaborative Virtual Prototyping: A Product Development Imperative

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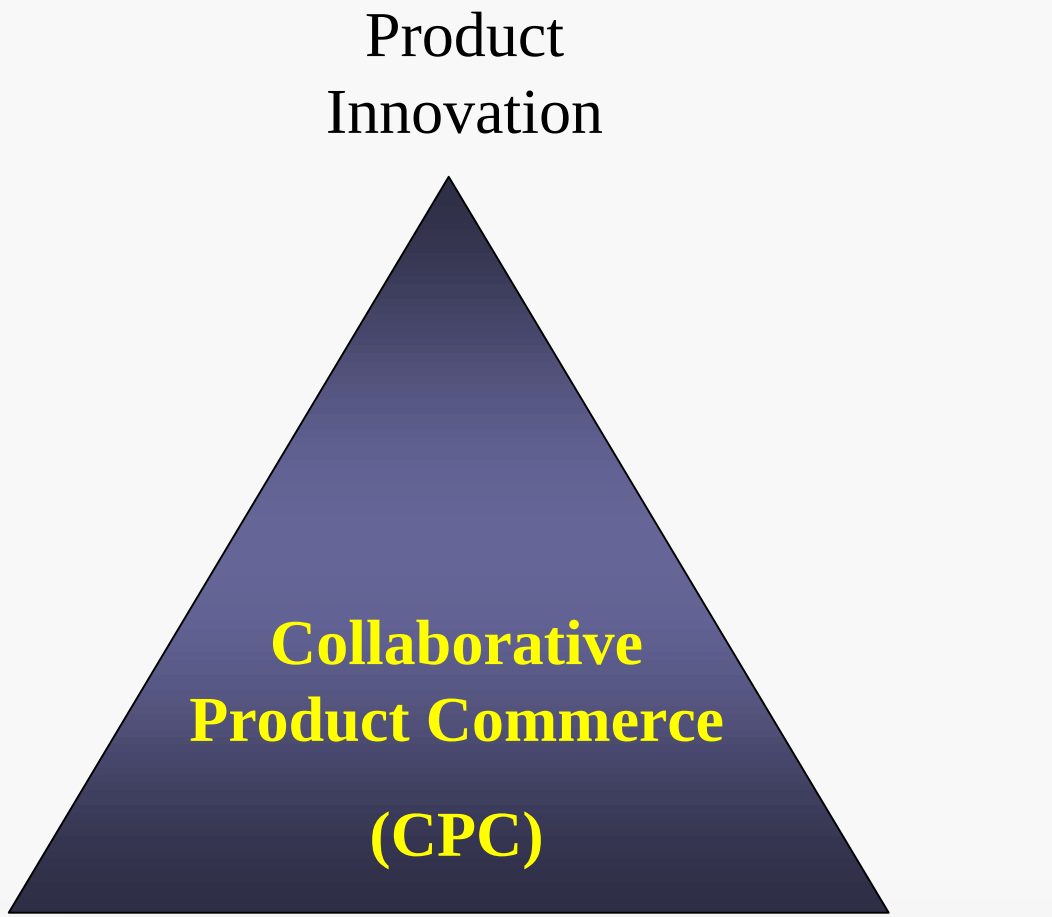
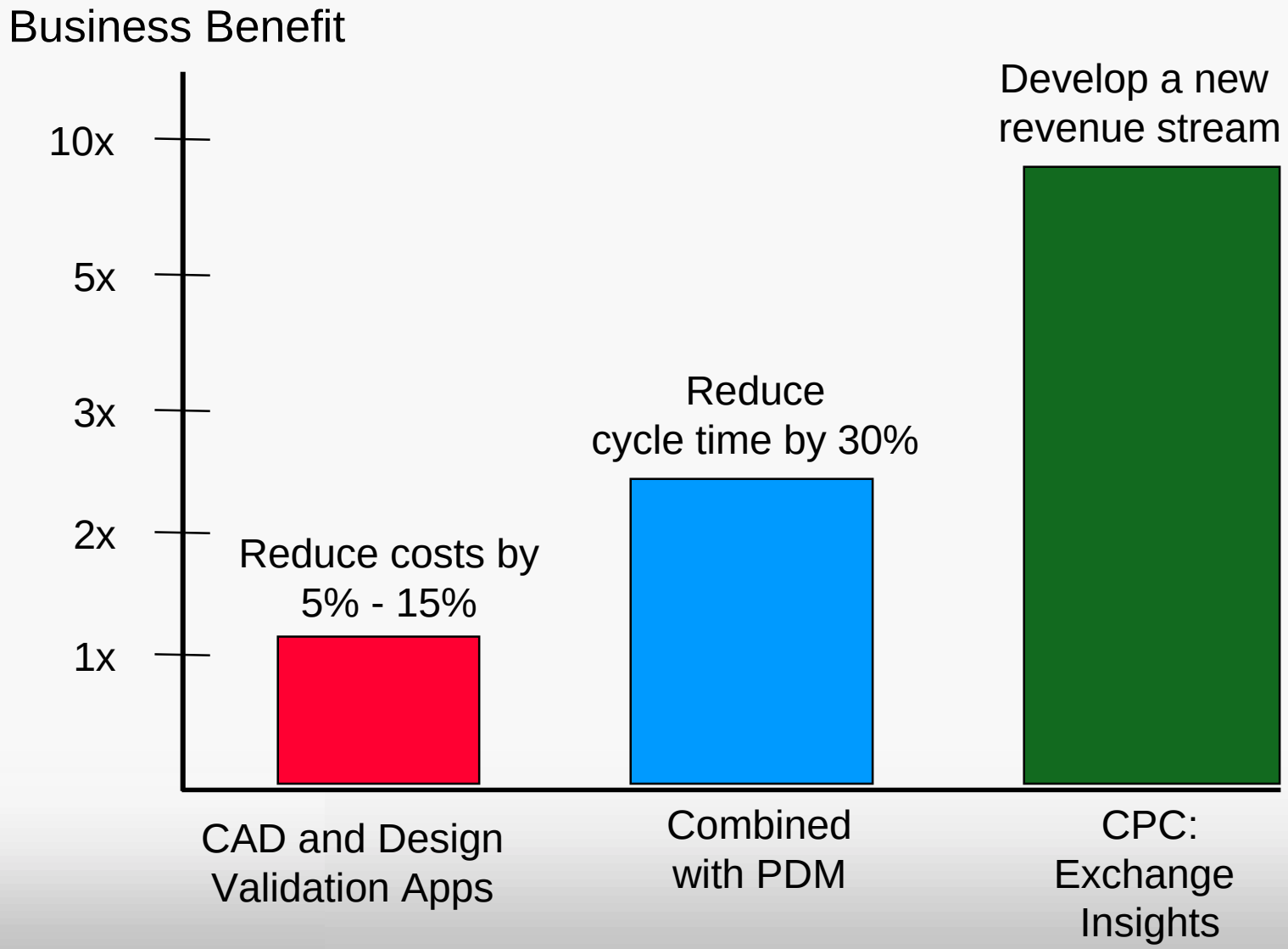
Key Issues

- What are the strategic competitive imperatives driving product development organizations over the next 5 years?
- How does Collaborative Virtual Prototyping (CVP) address the strategic imperatives and what are the key architectural components?

The Emerging Business Imperatives

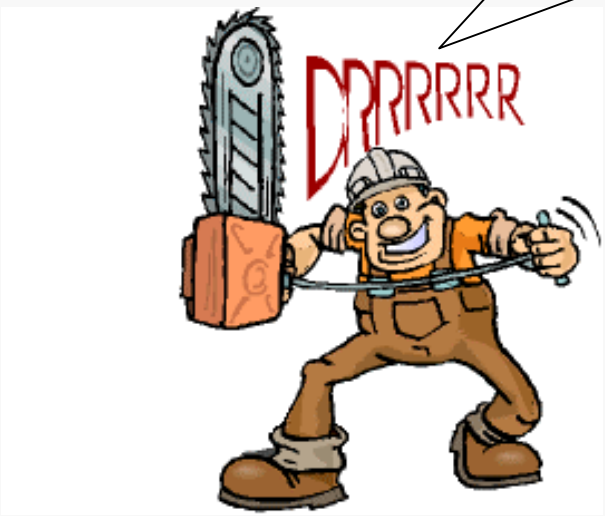


Innovate or Die!



Let's Collaborate!

You will be joining our B2B Commerce Portal won't you?

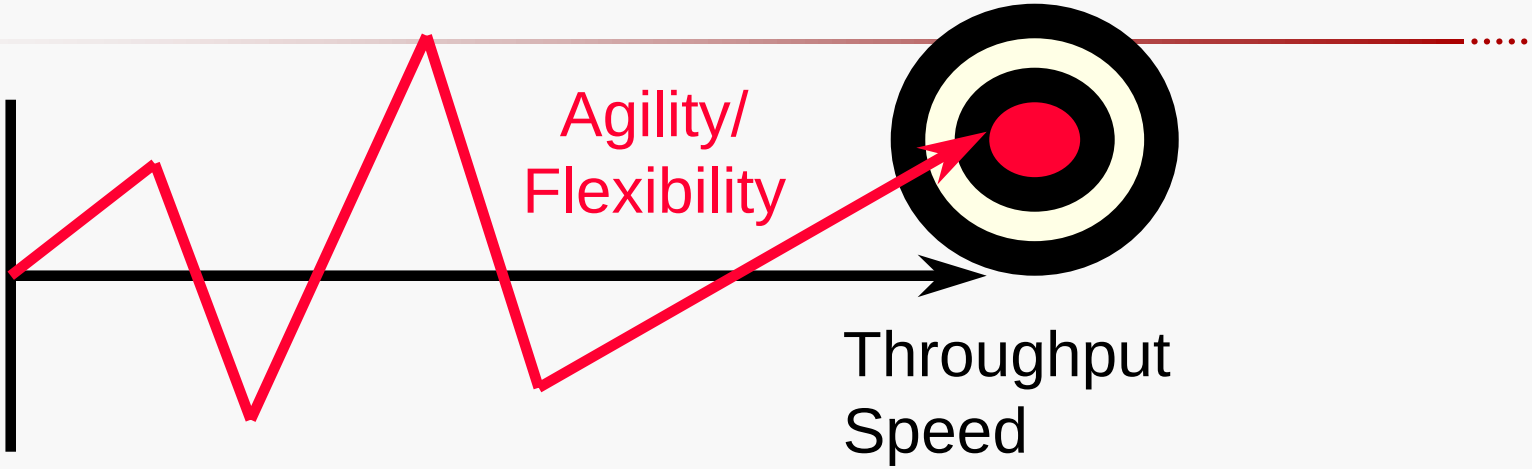


Newly Enlightened "E"-Channel Master

make it quick this time

Supplier

Collaboration Agility



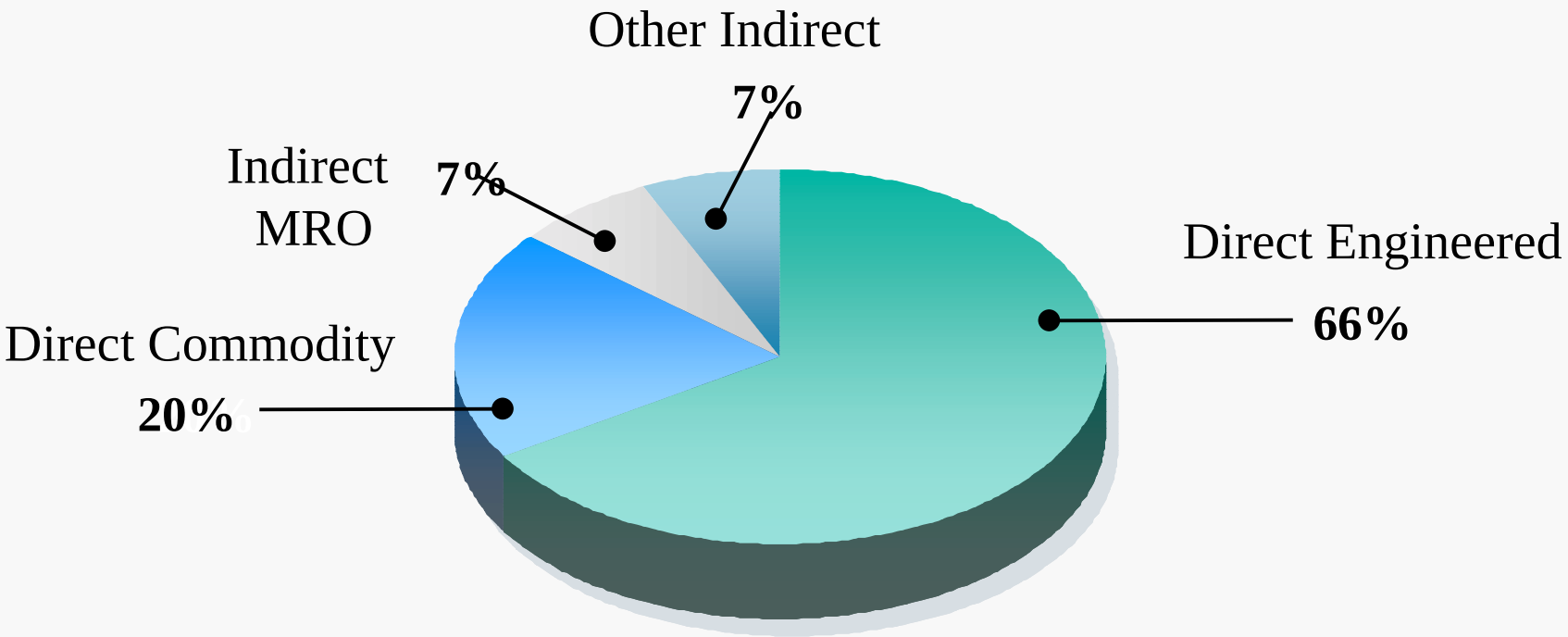
"Time-to-Market"

- Product development cycle-time speed
- Increased number of products introduced
- Exchange CAD files
- Supplier/OEM relationships
- Strategic partnerships
- Optimized processes

"Right-to-Market"

- Speed of product development course corrections
- Speed of adding innovative product features
- Share insights and ideas
- Supplier collaboration
- Recombinant business models
- Collaborative processes

Outsourced Engineering



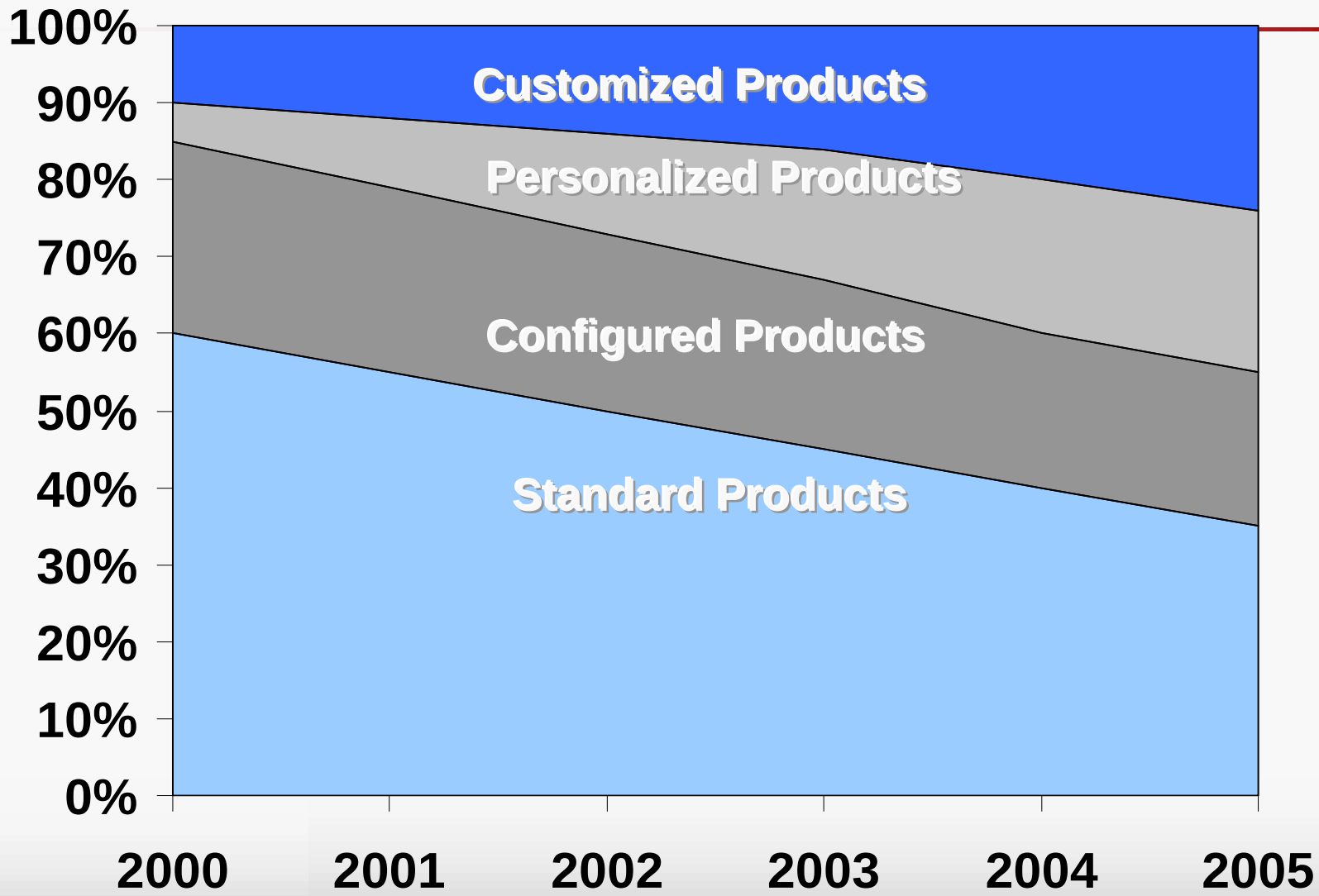
Source: Goldman Sachs, "e-Automotive Report", January 2000

"This is the biggest challenge since the industrial revolution"

-J. T. Battenberg III, CEO and President, Delphi Automotive Systems

Fortune , May 15, 2000 , v141, i10, p265+

B2B Product Mix



B2C - Personalize to Order

www.coolbikes.com

Web Access

CPC Applications

CPC Web Data Store

(CVP)

I want a cool custom bike

? Riding style
? Terrain
? Human factors

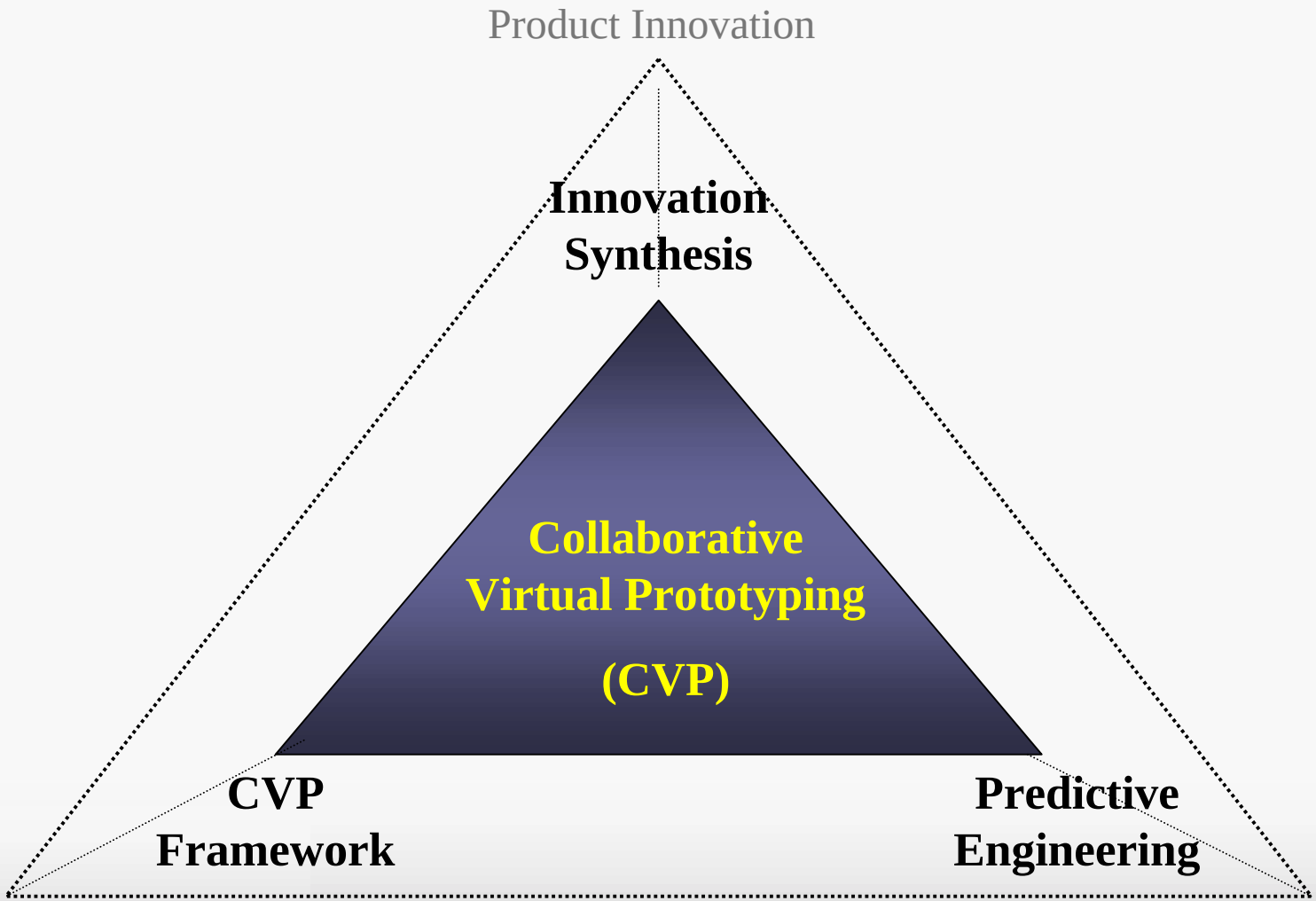
- Component groups
- Frame type
- Styling options

- Generate custom rendering
- Allow user to edit styling options

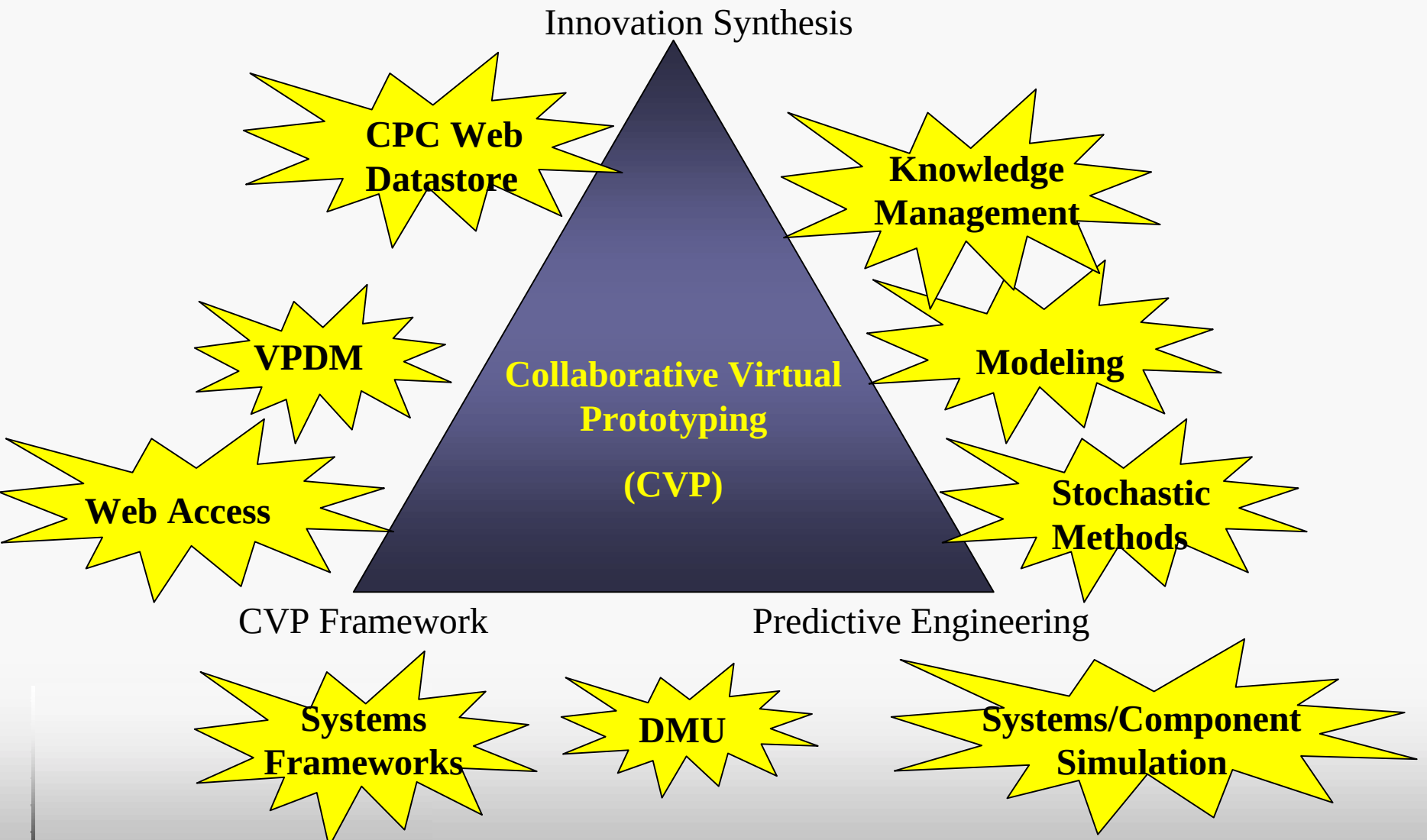
Key Issues

- What are the strategic competitive imperatives driving product development organizations over the next 5 years?
- **How does CVP address the strategic imperatives and what are the key architectural components?**

CVP Imperatives



CVP Building Blocks



Innovation Synthesis

What innovative approaches are available outside my company for solving this problem?

External Knowledge

Search patent and external knowledge databases, Use CPC supplier collaboration

3 Simulation

Will this approach meet performance and reliability criterIa?

CVP technologies

4 Instantiation

What parts or components could be used for this approach?

Internal Knowledge

Search CSM databases

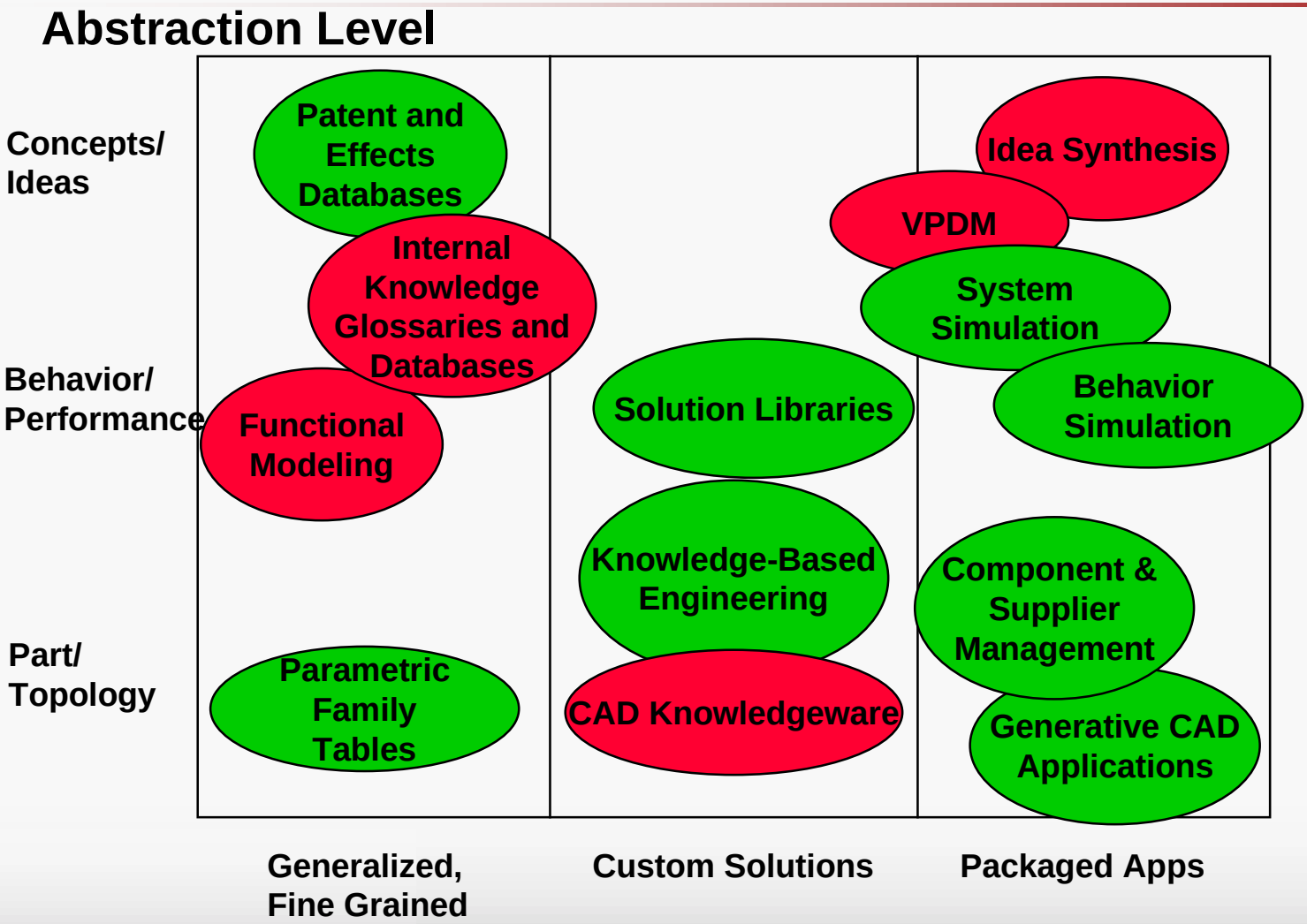
1

Is there internal pre-existing proprietary knowledge or resources to address this problem?

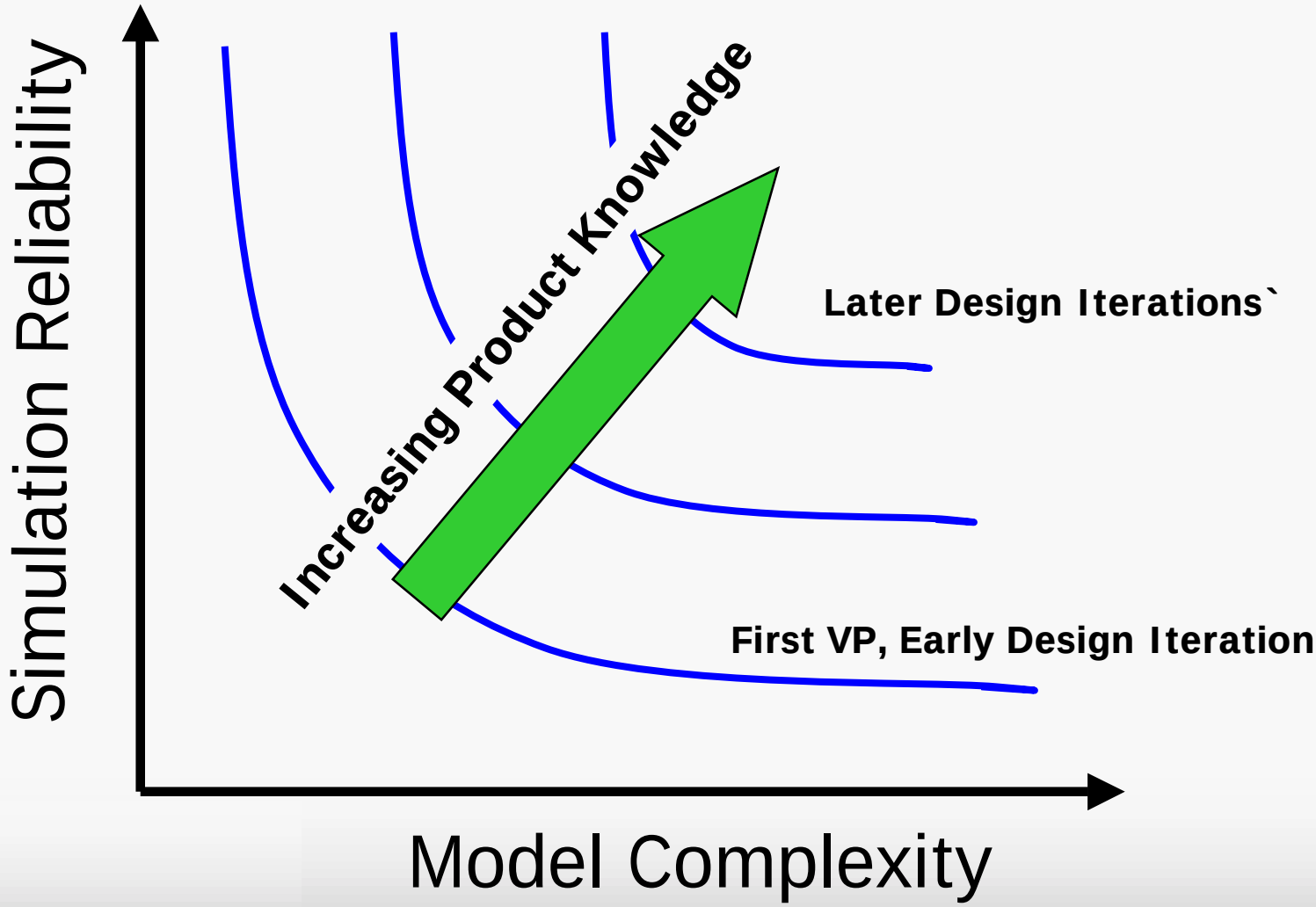
2

Search internal knowledge databases,CPC web data store,Use knowledge based engineering or generative applications

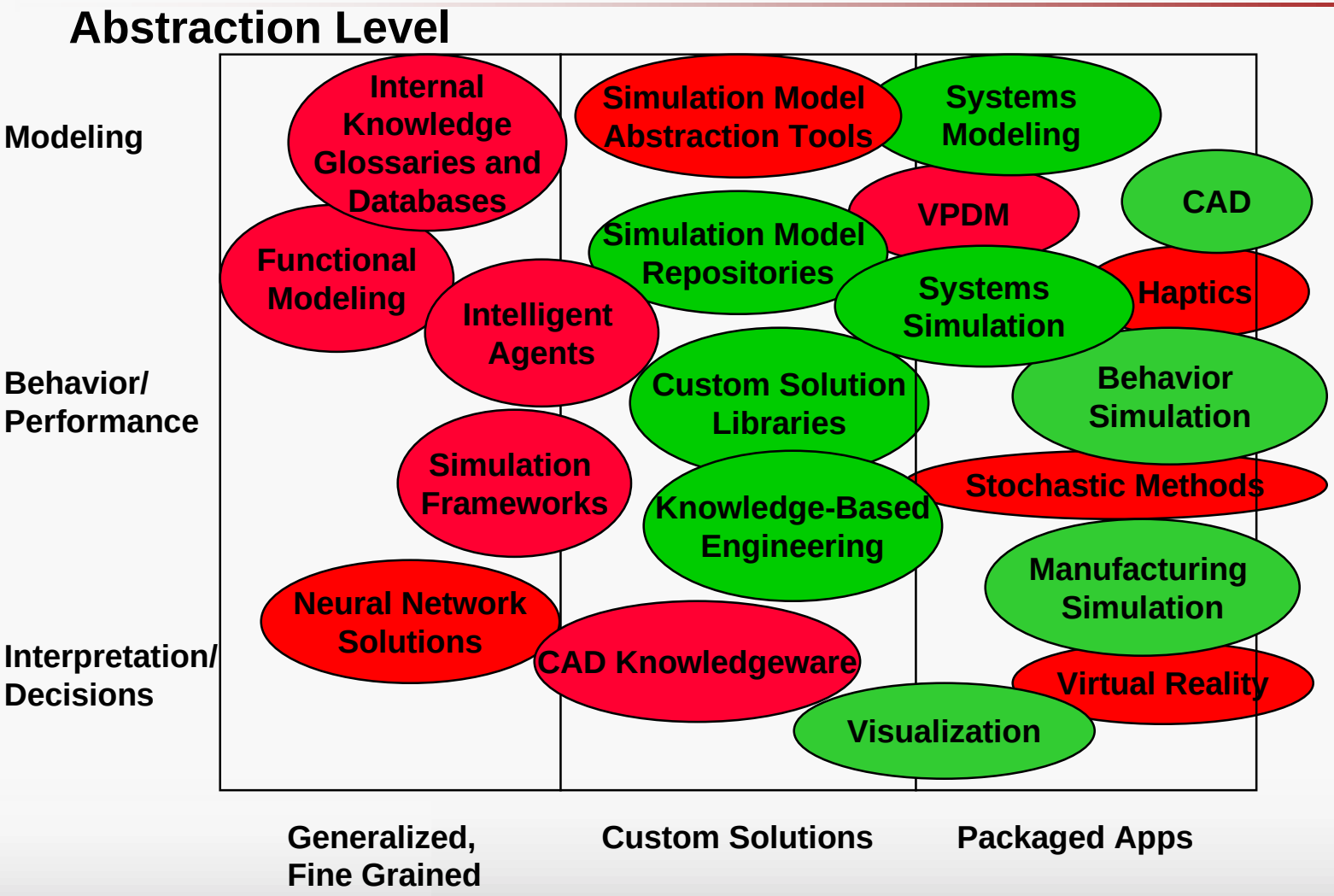
Innovation Synthesis Portfolio



Predictive Engineering

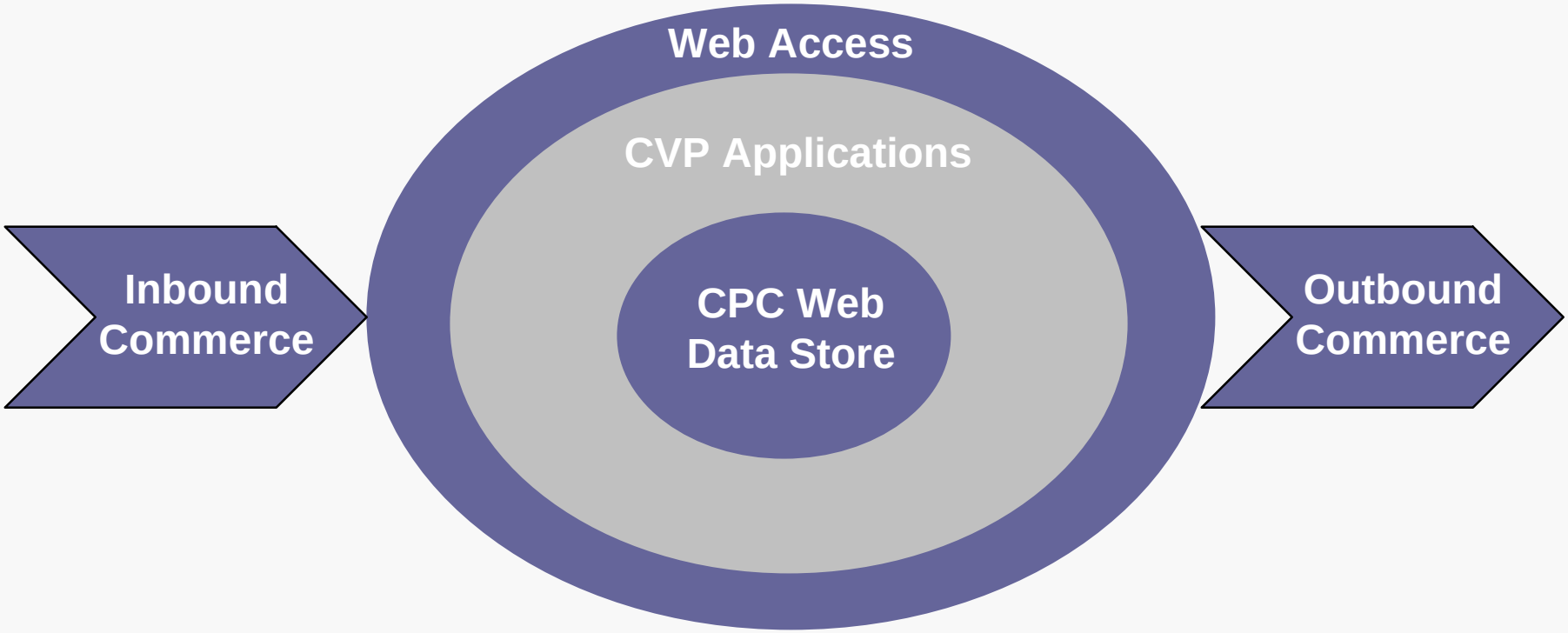


Predictive Engineering Portfolio



CVP Framework

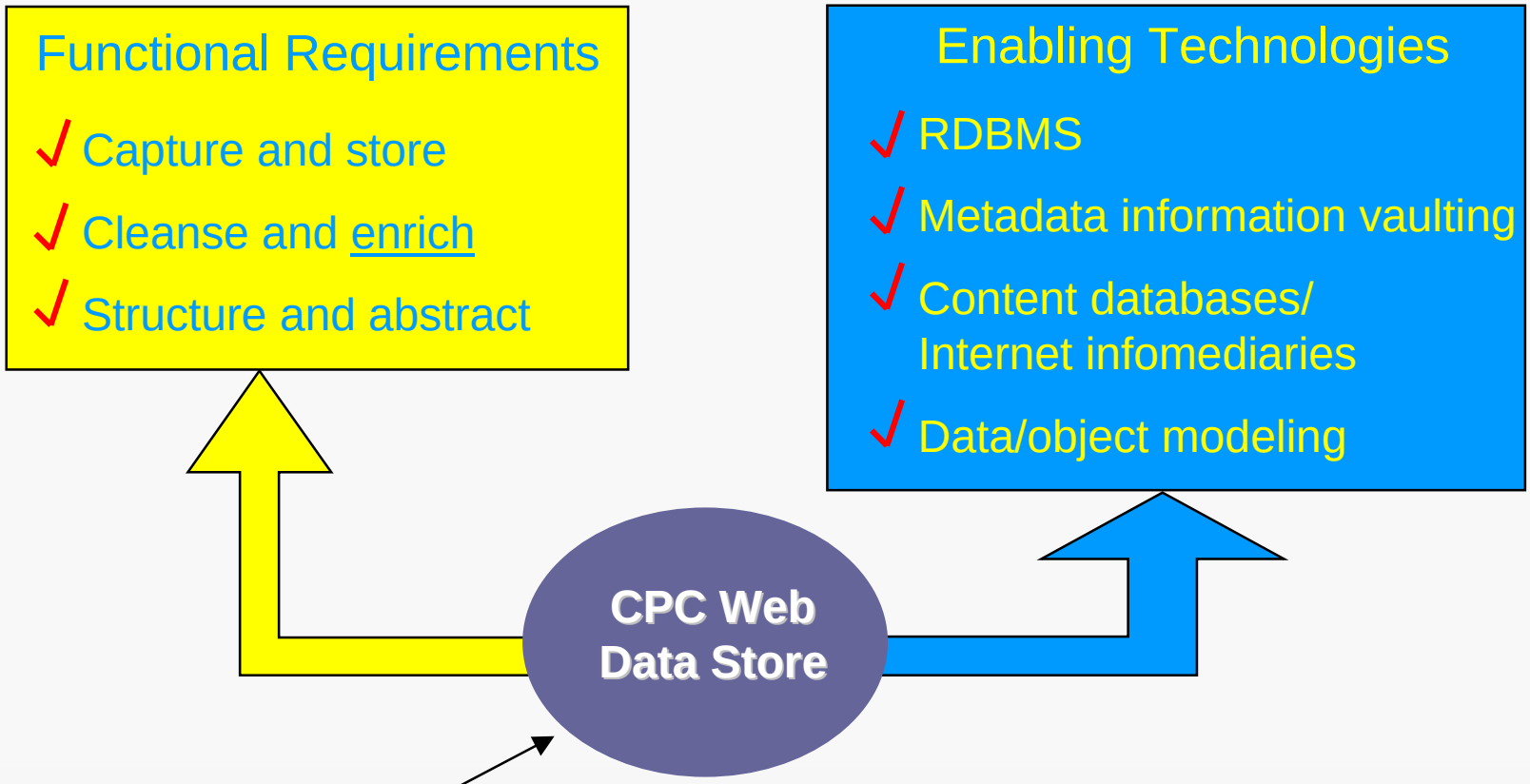
Collaborative Product Commerce (CPC) Portal



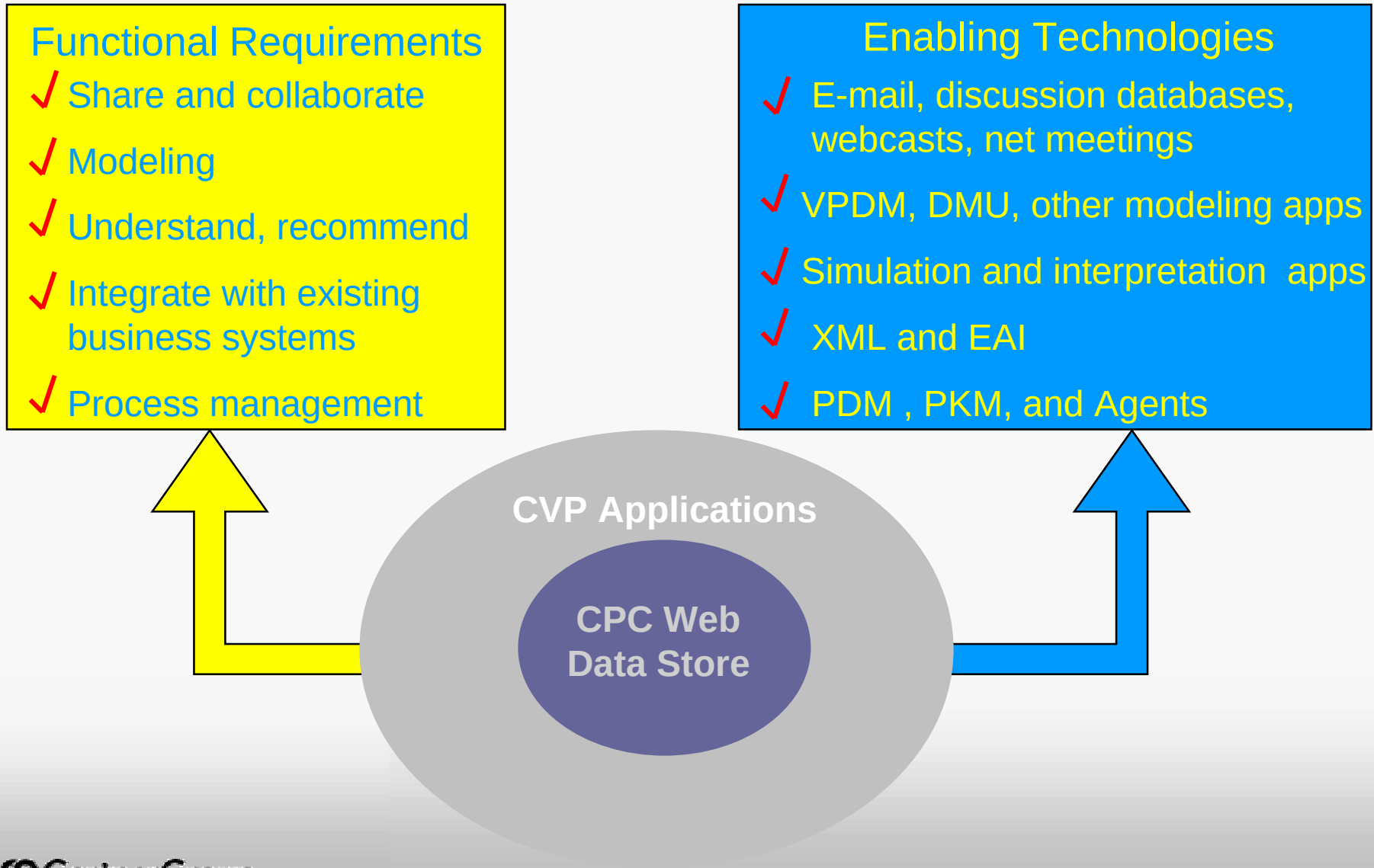
$ Collaborative Product Development
$ Collaborative Production Engineering

$ Product Commerce Portal
$ Product Maintenance Portal
$ Product Concept Marketing Portal

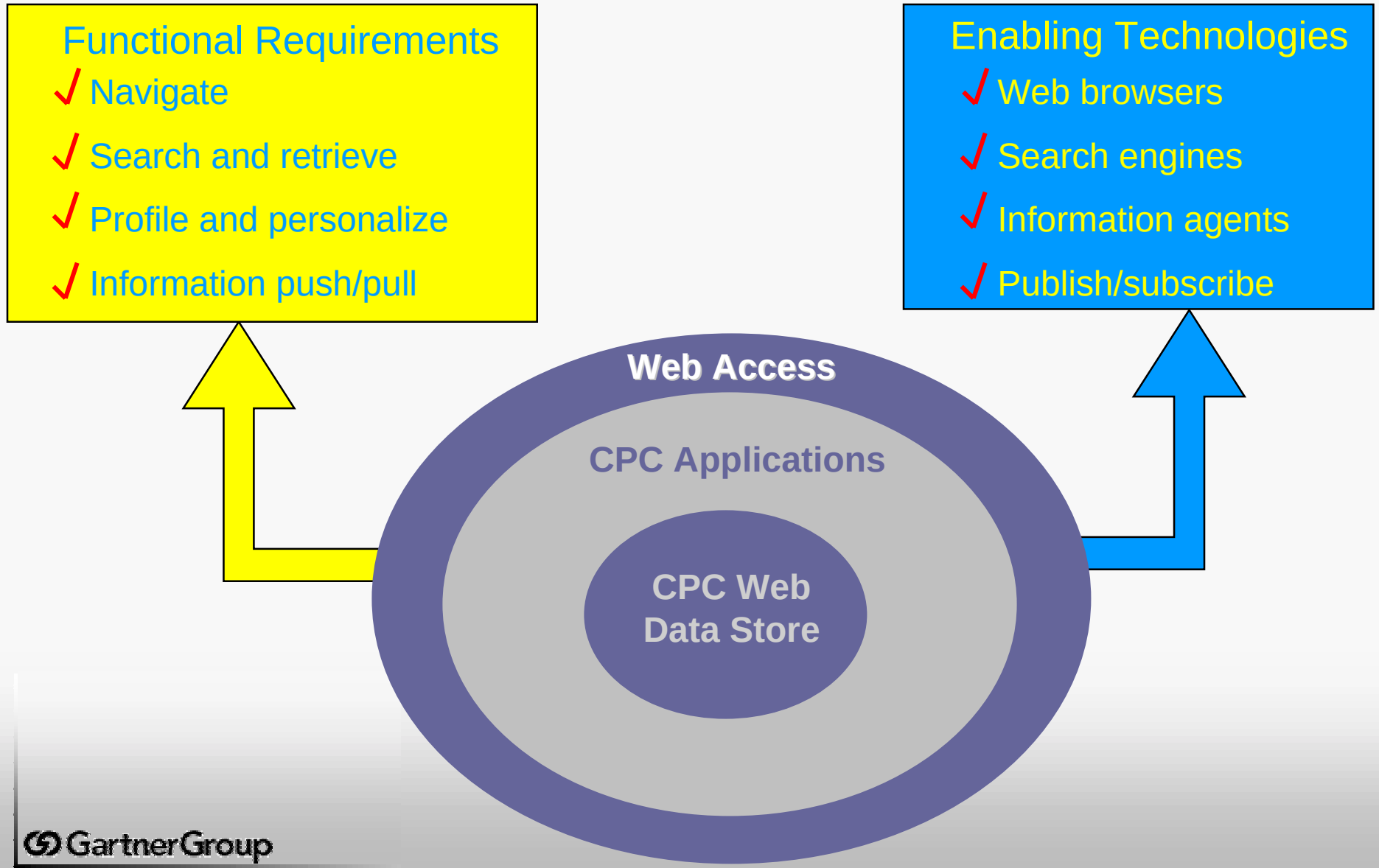
CPC Web Data Store



CVP Applications



Web Access


Functional Requirements
✓ Navigate
✓ Search and retrieve
✓ Profile and personalize
✓ Information push/pull
Enabling Technologies
✓ Web browsers
✓ Search engines
✓ Information agents
✓ Publish/subscribe
Web Access
CPC Applications
CPC Web
Data Store

Recommendations

- Collectively build a core competency in the capture and re-use of virtual prototyping experience and data.
- Focus on understanding the sensitivity of key design parameters to variability in manufacturing processes and operating environments.
- Develop an explicit understanding of interfaces between collaboration partners at both the technical and business level.
- Look for vendors that are proactively moving towards the CVP architectural model. Judge them on their CPC domain expertise and production-proven capabilities.

Summary

- Infusion of simulation capabilities into Collaborative Product Commerce will be driven by today's business imperatives.
- Such Collaborative Virtual Prototyping involves Innovation Synthesis, Predictive Engineering, and CVP Frameworks
- CVP success must be cultivated through the capture and re-use of Product Data and Product Knowledge across the supply chain