



## New trends in Industrial Electronics

The Mathworks, Global Development Conference, CRF, Oct 21, 2008

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PRIMA ELECTRONICS



# PRIMA ELECTRONICS \_\_\_\_\_ THE DOTS COMPANY®

## TOPICS

- PRIMA ELECTRONICS' background
- Categories of industrial electronics
- A new business model
- Design for manufacturing
- Our Mission and Value Proposition



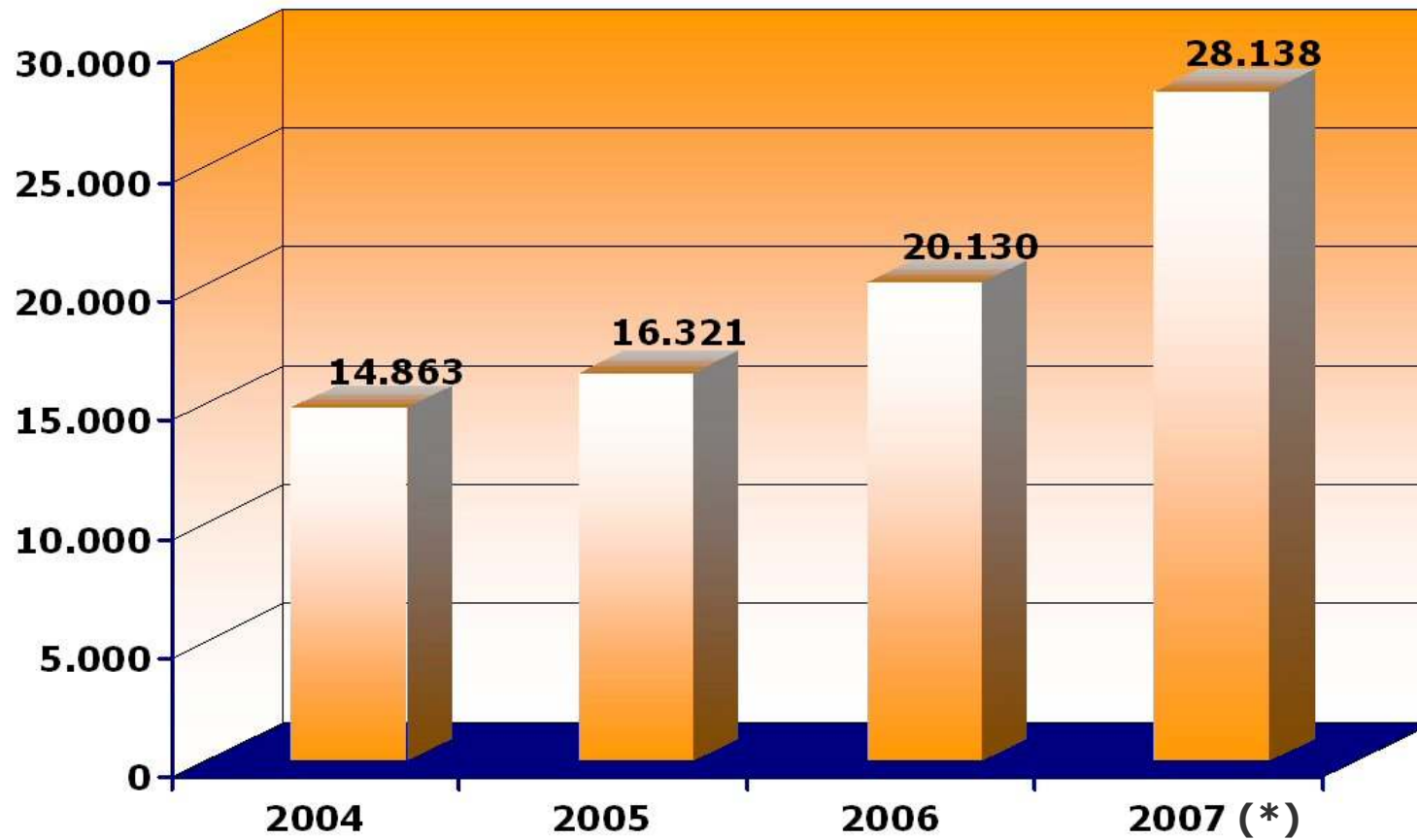
## PRIMA ELECTRONICS \_\_\_\_\_ THE DOTS COMPANY®

### THE COMPANY

- Founded in 1978, about 30 years of experience in industrial electronics
- Capital: 100% PRIMA INDUSTRIE SpA, public company on STAR market of Borsa Italiana, a leader in laser machines worldwide (420 MEUR+ 2007 Pro-forma group revenues)
- 2007 revenues: 28.1M€ (growth on 2006 = 39,8%)
- Growth also through M&A
- Including acquisitions, PRIMA ELECTRONICS is today a reality of over 250 employees (60 in Engineering) and 46.5 M€ revenues in industrial electronics
- PRIMA ELECTRONICS is #1 player in the Italian market of CNC
- Target markets: Industrial, Motion Control, Energy, Aerospace & Defense, Transportations, Automotive



**REVENUES 2007**

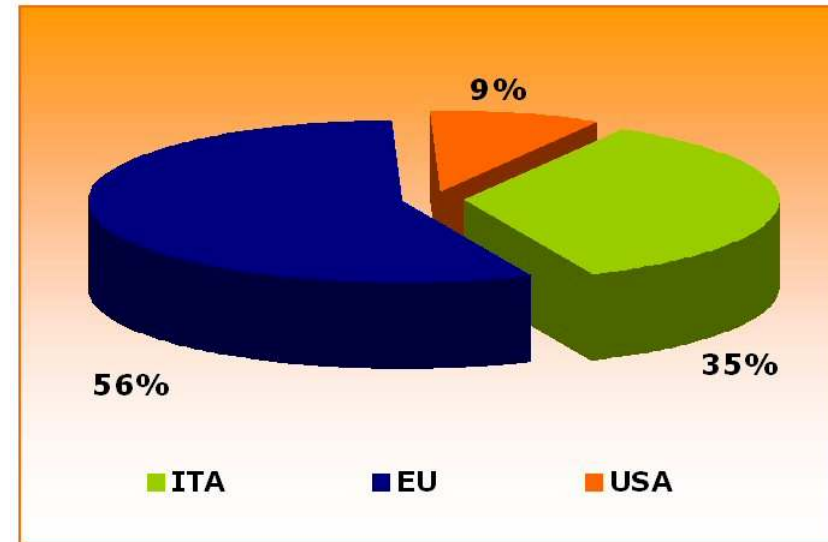
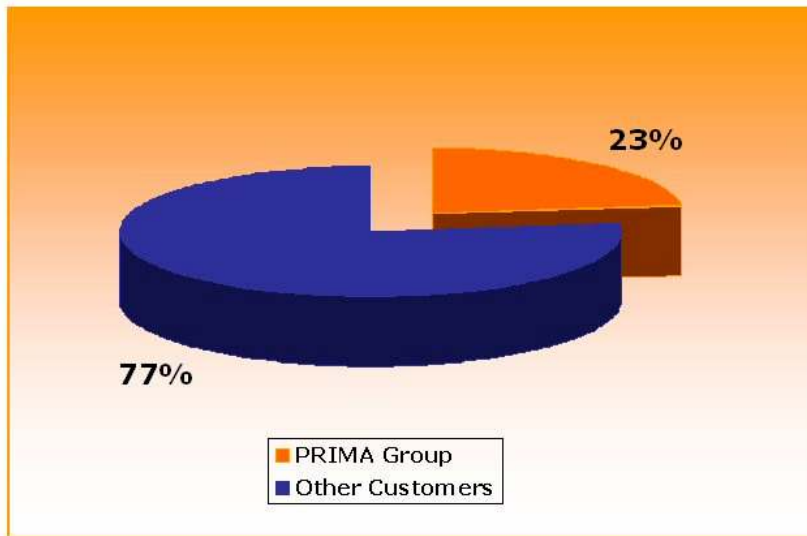


(\*) after integration of MLTA srl that contributed for about 5% to the 2007 revenue



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## FINANCIAL RESULTS 2007





**OUR MARKET**

### What Our Customers Do

- Robots
- Machining centers
- Trains
- Underwater Systems
- Pick&Place machines
- Fuel Cells
- Co-generators
- Air compressors
- Etc.

### What We Do

- HMI
  - Fieldbus boards
  - Servoboards
  - Inverters
  - Battery chargers
  - Etc.
- ... we enable Customers to create industrial products by providing them DEDICATED technology, expertise, reliability and innovation



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## VERTICAL MARKETS



**Industrial**

ATLAS COPCO  
BOBRY  
CAMPETELLA  
CINETIC  
ENGELHARDT  
IREM  
MANFREDI  
MYDATA AUTOMATION  
NEGRI BOSSI  
NERI MOTORI  
SDT



**Motion Control**

ABB SACE  
AIR LIQUIDE WELDING  
COMAU  
COORD3  
CREA  
DEA  
LVD  
METRIS  
PHASE MOTION CONTROL  
PRIMA INDUSTRIE



**Transportation**

ALSTOM FERROVIARIA  
ANSALDO BREDA  
ATM TRASPORTI MILANESI  
CENTRO RICERCHE FIAT  
CIRCUMVESUVIANA  
FIAT  
FIREMA TRASPORTI  
INFOMOBILITY.IT  
OCLAP  
PSA



**Energy**

ELECTRO POWER SYSTEMS  
LOMBARDINI MOTORI  
SAIPEM



**A&D**

ALENIA  
MICROTECNICA  
OTO MELARA  
SAAB UWS  
SEPA  
SERVOTRONIC

Different markets with the same need:  
"Embedded *Dedicated* Electronics"





**SOME EXAMPLES OF INNOVATIVE PRODUCTS**



**Orbital Welding System**

Saipem 1996

Used since now in different barges, has demonstrated to be 100 more productive than the previously manned welders in specific applications.



**Wireless Terminal**

Comau 2003

The problem of Machine Safety has been addressed, and a device has been integrated with a Robot.



**RFID on an Industrial PLC**

Atlas Copco 2004

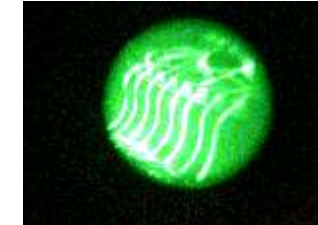
A PLC base IEC1131 device has been manufactured with the Antenna for the TAG reader integrated in the keyboard. In this way the resulting application can have an extra cost of about 7\$ above the normal system.



**PEM Fuel Cell System**

Electro Power System 2006

A 7 KVA backup system has been manufactured and supplied to a backup trial for a Telecom application. A cogeneration system has been deployed in 2007 in Germany.



**High Power Fibre Laser**

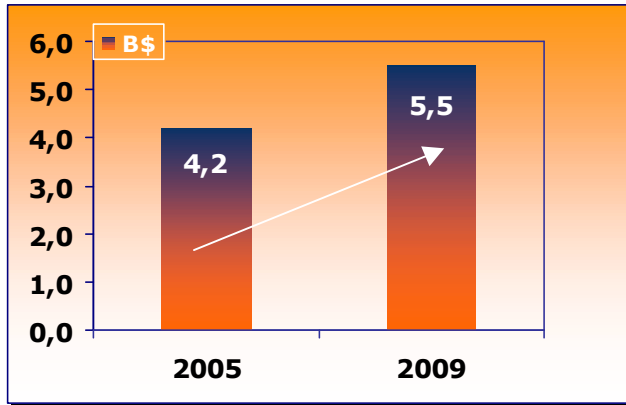
PRIMA INDUSTRIE 2008

A first generation of pumping systems has been developed, and successfully integrated with two different Optical resonators. The second generation is under-way to reach the 2kW target by the end of 2008.





**THE EMBEDDED ELECTRONICS MARKET**



Source: VDC, IMS Research & others

- An embedded system is a specialized system included in a physical device, integrating minimal hardware/software resources to perform a specific task
- Embedded market is pushed by many drivers; the main are:
  - more performances/functionalities at lower cost
  - need of fast time-to-market
  - countless market segments
- Embedded is healthy and growing

**Markets 2005-2010 (Revenue by Application, \$M)**

	2005	2006	2007	2008	2009	2010	CAGR(%)
<b>Communications</b>	1.187	1.296	1.472	1.641	1.682	1.882	9,7
<b>Industrial</b>	1.028	1.102	1.182	1.268	1.288	1.388	6,2
<b>Medical</b>	456	494	534	578	588	640	7,0
<b>Military/Aerospace</b>	807,0	875	949,0	1.030	1.049	1.144	7,2
<b>Other</b>	469	508	550,7	597,0	608	663	7,2
<b>Total</b>	<b>3.946</b>	<b>4.277</b>	<b>4.688</b>	<b>4.113</b>	<b>5.215</b>	<b>5.716</b>	<b>7,7</b>

Source: ETP2006 report





**SOME KEY QUESTIONS FOR POSITIONING**

- Where can we **compete**?
  - What is our **value proposition**?
  - How can we enable customers to **differentiate** from competition?
  - How do we differentiate from competition?
  - How can we **anticipate** market needs based on our past experience?
- 
- All these questions were addressed in 1Q07 in order to define our “brand”, i.e.
    - Our value proposition
    - Our mission
    - Our business model



## TRENDS IN ELECTRONICS

### ● Technological trends

- Higher integration
- Higher processing power
- More graphical functions
- More speed and performance
- More communication resources
- More flexibility
- Etc.

### ● Make or Buy?

**Make** = Implementing an in-house system (CUSTOM)

- Hardware design: specifications, parts procurements, complex schematics, rendering and layout, etc.
- Build and test prototypes, followed by redesign iterations
- Product lifetime management (embedded products live longer than their parts)
- Face obsolescence and define agreements regarding life-cycle management

**Buy** = adopt an off-the-shelf product (COTS)

- Quicker, but costs and functionalities are not always optimal
- Customer support can be limited (your partner may be just a “box-mover”)
- Reliability and quality problems with low volumes, difficult issue to solve



**CUSTOM vs. COTS**

Costs of R&D  
Product unit cost  
Customer product's volume  
Time-To-Market  
Functionalities / features  
Integration  
Availability of additional hw/sw  
Technical support  
Extended/special requirements  
Product evolution (life-cycle)  
Long-term support

Custom	COTS
Single Customer	Manufacturer
Low	High
Medium/high	Low
Long	Fast
Application specific	Standard
Optimized	Non optimal
Rare	High
Direct	Through sales channels
On demand	Rare
Customer responsibility	Imposed by the market
On demand	Uncertain





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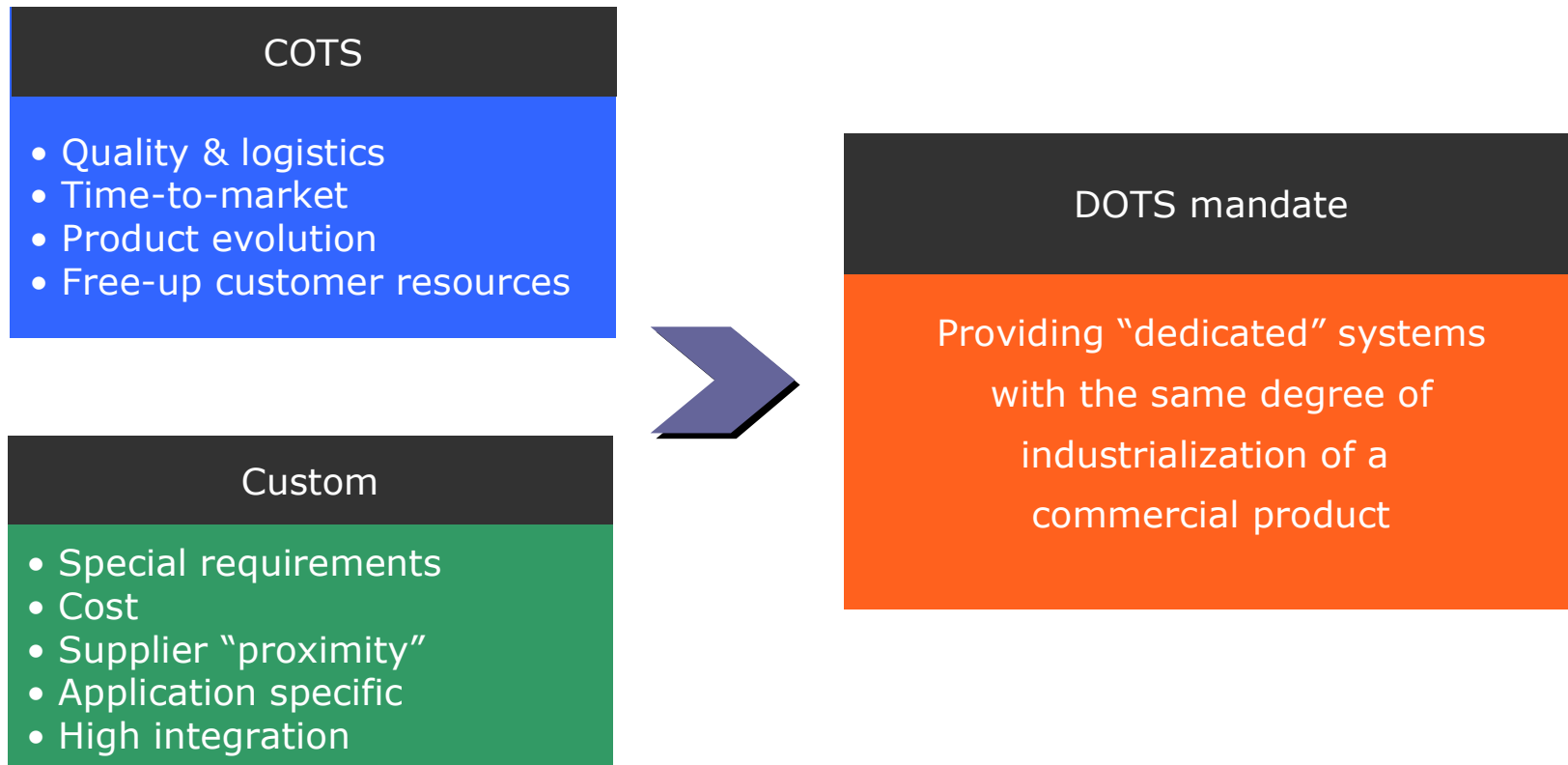
### MAKE OR BUY?

- Decision to be taken at executive level. What worries Decision Makers in choosing a “**partner**” rather than a “supplier”?
  - Relying on a company “not solid enough”
  - The dilemma between “box movers” and “proprietary solutions”
- The choice is often based on trade-offs and historical **cycles**
- Frequent cases of cyclic “back-and-forth” between COTS and custom. Why?
- There is a wide category of applications, usually with production volumes already of significant quantities, which neither of the two categories is suitable for (**no man’s land**)
- We called this new category **DOTS**

**DOTS (Dedicated Off-The-Shelf)®**



**THE MARKET SHIFT TO DOTS**

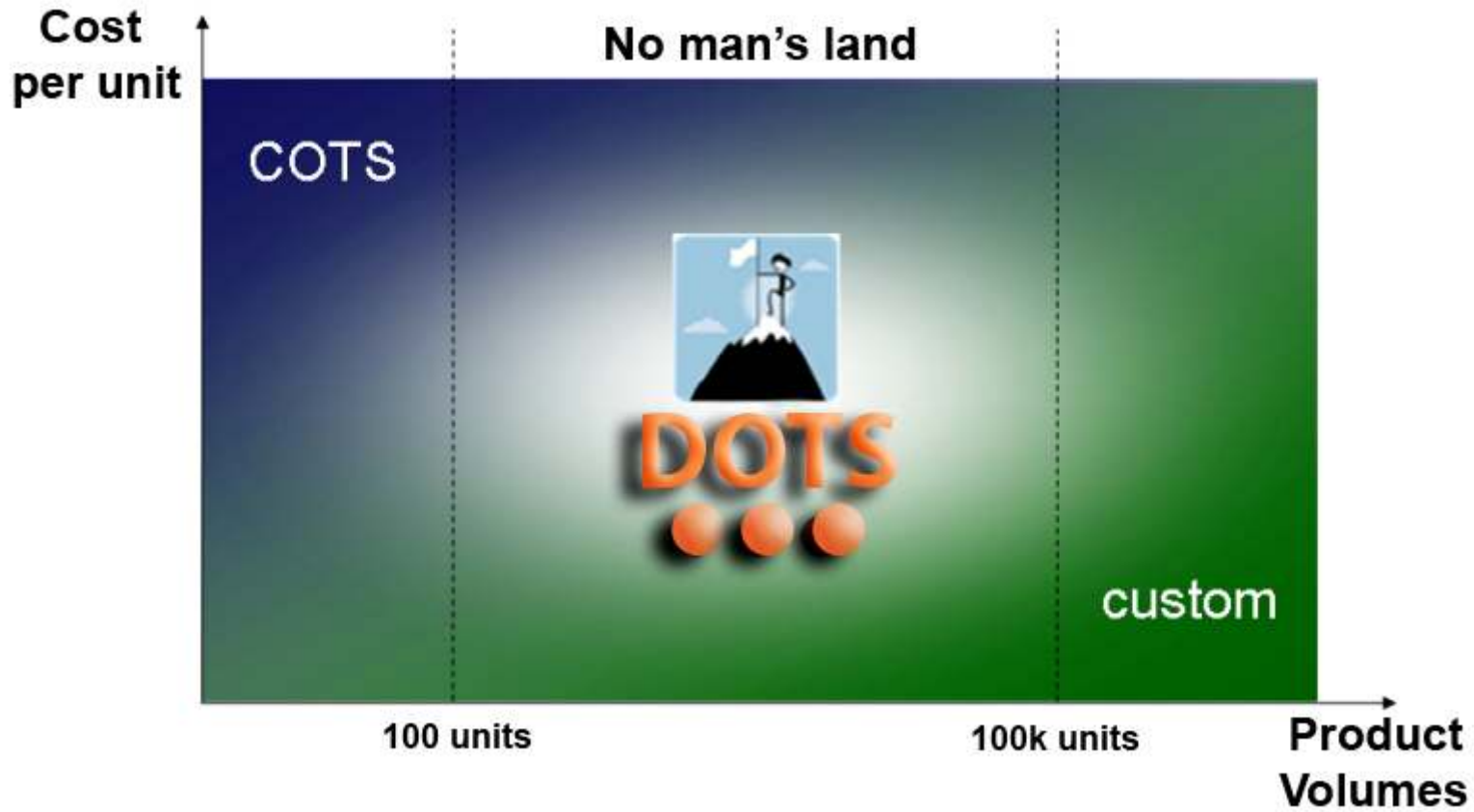




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 DOTS





**SOME FIRST FEEDBACK ON DOTS**

*"Between the suppliers of General Purpose and custom electronics, the ones proposing dedicated robotics solutions are showing the best proposals.", COMAU Robotics, Director of Engineering*

*"We want a supplier who has got the experience like you", METRIS, Strategic Sourcing*

*"A timely redefinition of COTS in terms of Custom Off-The-Self.", RECAB Danemark, RECAB Web Site*

*"We struggle with COTS suppliers forcing us to change our hardware every 2-3 years. We need a semi-custom approach.", GAMBRO DASCOS, Project Manager*

*"I understand that working with you I can significantly reduce my design schedule and increase time-to-market.", METRIS, VP of Engineering*

*"It's interesting your concept of DOTS and relevant business model.", MYDATA Automation, Strategic Purchaser*





## KEY ROLE OF MANUFACTURING IN PRODUCT DEVELOPMENT

- DOTS means mid/long term partnership with customer, based on product **manufacturing**  
Delivering industrial-grade products dedicated to customers' applications
- **Manufacturing is key in product development/evolution** of an electronic product, having an impact on both **quality** and **costs**
- Also series production requires continuous **upgrades** of product design to align it with product and process evolution
- **Design for Manufacturing** means taking the production process into account since the beginning of the design phase
- To succeed in DOTS electronics, Design for Manufacturing allows to answer the following **KEY issues** of today's industrial electronics:

Product life cycle  
Production volumes  
Production process  
Size of components



## PRODUCT LIFE & OBSOLESCENCE

- During product life, redesign is much likely to occur  
if **planned** at design phase with the expected evolution of components,  
redesign can be an excellent opportunity of product update at “**no cost**”
  - Increased performance, more functionalities
  - Cost reduction
- Life of industrial products is much longer than the life of its components
  - impact on design choices to ensure product **continuity**
- Obsolescence  
Can put at risk the continuity of the product  
Need to be **governed** and anticipated  
In some cases, when product continuity is a MUST, the choice of technology  
at design phase must be appropriate (e.g. SOPC)



## PRODUCTION VOLUMES

- Products with high volumes
  - Short life, very low unit cost (consumer, white, some automotive)
  - Difficult to keep from moving into low cost countries (strong impact of labour cost per product unit)
- Mid and low volumes (up to 100.000 units/year)
  - Longer life
  - Different markets
  - More **flexibility** required in manufacturing (many product versions)
  - Critical issues are no more “price only”, but **maintenance**, longer **life**, robust **quality**, etc.
  - Challenges in delivering and keeping high quality in low/mid volumes (difficult and expensive)



## PRODUCTION SYSTEMS: IMPACT ON ELECTRONIC DESIGN

- Choice of component packages to reduce PCB size:
  - lower costs
  - more difficult soldering/testing
- Define test pads for automatic testing machines
- Use Boundary Scan for testing of high density circuits
  - correct choice of components
- Electrical test (parametric and functional in circuit)
  - use of Boundary Scan or flying probes test machines
  - plan needed connectors for in circuit access





## SIZE OF COMPONENTS

- Consequences of component size reduction:
  - higher **investments** needed in tooling up for production
  - prototypes are more difficult to implement
  - prototypes require expensive **tooling**, same as mass production (stencils, fixtures, programming for mounting, inspection and testing)
  - higher **NRE** in prototyping and pre-series phases wrt to the past
- No more manual prototypes, but immediate small production lots (Pilot Batches):
  - manufacturing process can be **validated** at design phase
  - integration** of design and manufacturing anticipated during prototyping or pre-series phase
- Use of breadboards and software simulators becomes a key need, but validation of design shall more and more require a pilot batch (very similar to series production)



## OUR STRATEGY IN INDUSTRIAL ELECTRONICS

- Moving manufacturing to Low Cost Countries can result into the disappearance of key design skills
- Today's manufacturers are likely to become tomorrow's design engineers
- Design for manufacturing requires mastering the manufacturing know-how
- Also thanks to the manufacturing environment we can create and develop all needed skills for the best product design
- Our strategy:
  - Since 1998 PRIMA ELECTRONICS has **internalized** the manufacturing process
  - Today we have complete control of the manufacturing process, thus attaining a measurable increase of product **quality**





**OUR VALUE PROPOSITION**

<b>Skills</b>	<b>Long-term Partnership</b>	<b>Business Model</b>
Technical & competent staff	Integrity & confidentiality	Industrial-grade Electronics
Quality & Logistics	Integrated R&S efforts	Long-term support
Manufacturing capacity	Focus on long-term business	Competitive prices
Flexibility & velocity	Production based on forecast	Time-to-market
Innovation	Co-investments	Lean organization
Cross fertilization	Company stability	Shared risks / Shared success
Design for manufacturing		





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## PRIMA ELECTRONICS' MISSION

PRIMA ELECTRONICS, the leader in **DOTS** (**D**edicated **O**ff-**T**he-**S**helf)® electronics, designs, prototypes and manufactures for its customers "industrial-grade" dedicated electronics boards and systems, with competitive costs and allowing fast time-to-market.

Its technical skills, quality of product and services, efficient organization and logistics, financial stability are the core of our value proposition: a loyal, reliable and long-term partner for its customers.

CNC and motion-control, energy, industrial and process control, transportation, aerospace & defense are among the main markets of activity of PRIMA ELECTRONICS, in stable partnership with primary Italian and international customers.





# PRIMA ELECTRONICS \_\_\_\_\_ THE DOTS COMPANY®

## MAIN CUSTOMERS





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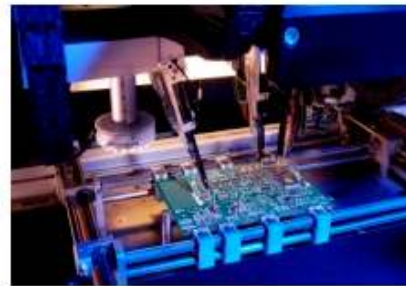
## DOTS ELECTRONICS IN CUSTOMERS APPLICATIONS





# PRIMA ELECTRONICS \_\_\_\_\_ THE DOTS COMPANY®

## WHAT WE DO





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 Q&A

THANK YOU

[www.primaelectronics.com](http://www.primaelectronics.com)

