Innovation in Business Markets

State Designated as Florida's Principal Provider of Business Assistance [§ 288.001, Fla. Stat.]

Helping Businesses Grow & Succeed

About Your Presenter

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Member – National Defense Industrial Association

Member – Aerospace Industry Association

Member – Army Aviation Association of America

www.jabil.com

Introductions

Name?

Business interests?

Expectations?

Seminar Objectives

To provide you a snapshot of:

JABIL

Innovation at Jabil

Jabil's Technology Intelligence & Analysis Process (TIAP)

Innovation in Business Markets

"From Delivering Customer Needs to Developing Customer Wants"

How does the U.S. Government Foster, Support, & Encourage Innovation?

- General
- SBIR - Small Business Innovation Research Program
- DARPA - Defense Advanced Research Projects Agency
- IARPA - Intelligence Advanced Research Projects Activity

General

- ✓Tax Credits for R&D
- ✓Education & Training
- ✓IP Protection
- ✓Direct Financial Investment
- ✓Public/Private Collaboration (SBA.GOV)
- ❑Trade - Import/Export Restrictions or Currency Controls

Small Business Innovation Research Program (SBIR)

SBIR funds critical startup and development stages and encourages commercialization of the technology, product, or service, which should stimulate the US Economy through three phase process: Start-up - Feasibility (up to $100K for 6 months), Phase II – R&D (up to $750K for 2 years), Phase III – Commercialization (No SBIR Funds)

11 participating agencies: Agriculture, Commerce, Defense, Education, Energy, Health & Human Services, Homeland Security, Transportation, EPA, NASA, & NSF

Awards given based upon:
- Business Qualification
- Degree of Innovation
- Technical Merit
- Future Market Potential

Required Attributes:
- American-owned & independently operated
- For profit
- Principal researcher employed by business
- Company size limited to 500 employees

Defense Advanced Research Projects Agency (DARPA)

Categories:

- AEO – Technology, Adaptability & Transfer
- BTO – Biology, Technology & Complexity
- DSO – Discovery, Modeling, Design & Assembly
- I2O – Information, Innovation & Cyber
- MTO – Electronics, Photonics & MEMS
- STO – Networks, Cost Leverage & Adaptability
- TTO – Weapons, Platforms & Space

DARPA primarily uses two solicitation methods: (1) Broad Agency Announcements (BAAs)/Research Announcements (RAs) and (2) Requests for Proposal (RFPs).

- http://www.darpa.mil/Opportunities/Solicitations/DARPA_Solicitations.aspx
- http://dtsn.darpa.mil/sbpt/ - DARPA Small Business Planning Tool

Intelligence Advanced Research Projects Activity – (IARPA)

- The Intelligence Advanced Research Projects Activity (IARPA) invests in high-risk, high-payoff research programs to tackle some of the most difficult challenges of the agencies and disciplines in the Intelligence Community.
- Focus of IARPA:
  - Incisive Analysis
  - Safe & Secure Operations (Countermeasures)
  - Smart Data Collection

- IARPA uses primarily two solicitation methods, General and Program solicitations. In addition, IARPA Distribution and Evaluation System (IDEAS), is a web-based software tool that enables submission of unclassified proposals submitted in response to IARPA Research Solicitations. https://iarpa-ideas.gov/Client/signin2.aspx

Development Contracts – Tool of Communication

Project – Ruggedized Optically Bonded Resistive and Capacitive Touch Displays for Over-the-Frame LCDs

PROJECT Description

STATUS QUO

(Commercially Available)

- In-field Durability (non-ruggedized): low mechanical impact resistance
- Image Quality: diminished sunlight readability
- Potential Bonded Process (air gap bonded)

NEW INSIGHTS

Optically Bonded vs. Air Gap Bonded

- Advanced Semi-automated Liquid Optical Bonding Process
- Improved Manufacturability

Technical Approach:

- [illegible] & [illegible] optical bonding.

Key Challenges:

- [illegible] processes and [illegible] application needs and requires a robust fixture solution.
- For film bonding, the [illegible] properties during processing and adhesion properties determine process yield and in-field performance.
- For liquid bonding, [illegible] material sets are chemically and mechanically [illegible] for optimized yield and in-field performance.
- High performance, lower cost materials and ruggedized touch display components for enhanced performance during in-field operation (temperature, humidity, impact, etc.).
- Automation of [illegible] process steps e.g. [illegible] pick up, lamination to improve yields.

Approach to Challenges:

- Develop processes that are robust and display size insensitive.
- Select materials and evaluate pros and cons for the most technically mature bonding processes.
- Assess materials systems and their chemico-mechanical compatibilities.
- Develop scalable processes that deliver displays demonstrating enhanced reliability and functionality.

QUANTITATIVE IMPACT

Enhanced Impact Resistance

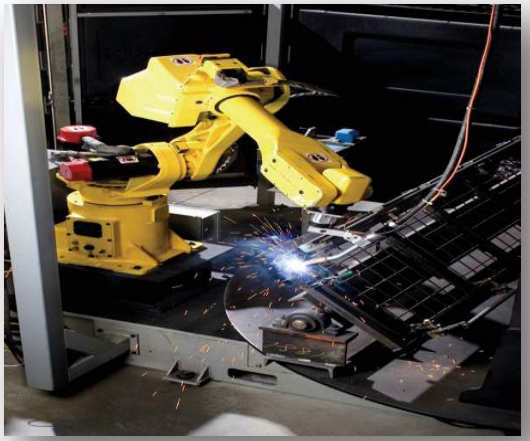
- [illegible] with the leading metal oxide touch.
- [illegible] bonding solution provides [illegible] impact resistance.
- Improved manufacturing [illegible].

END-OF-Project GOAL

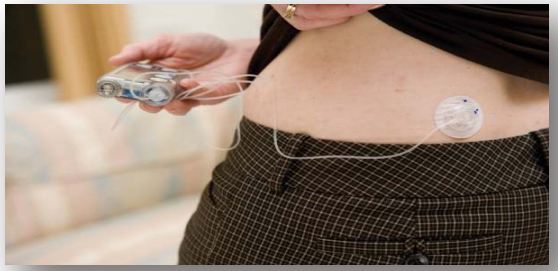
- Design guidelines and manufacturing processes to deliver a spectrum of display solutions for [illegible] critical space, communications requirements.

Deliver a Scalable High Yield Semi-automated Optical Bonding System

Fueling Jabil's growth



"The key to Jabil's future growth is the thing that fueled its past success: finding ways to apply its expertise to new industries" *- Tim Main, Jabil's Chairman of the Board*



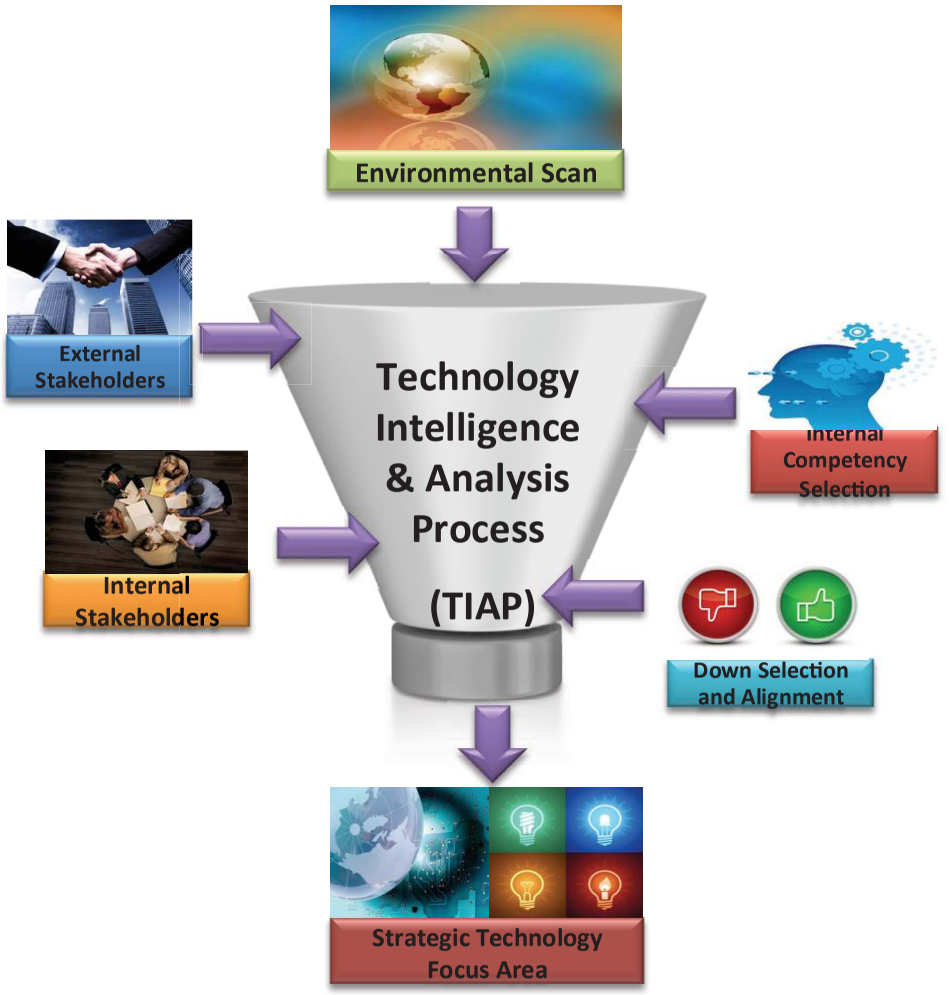
Jabil Snapshot

Offering Global Electronics Solutions

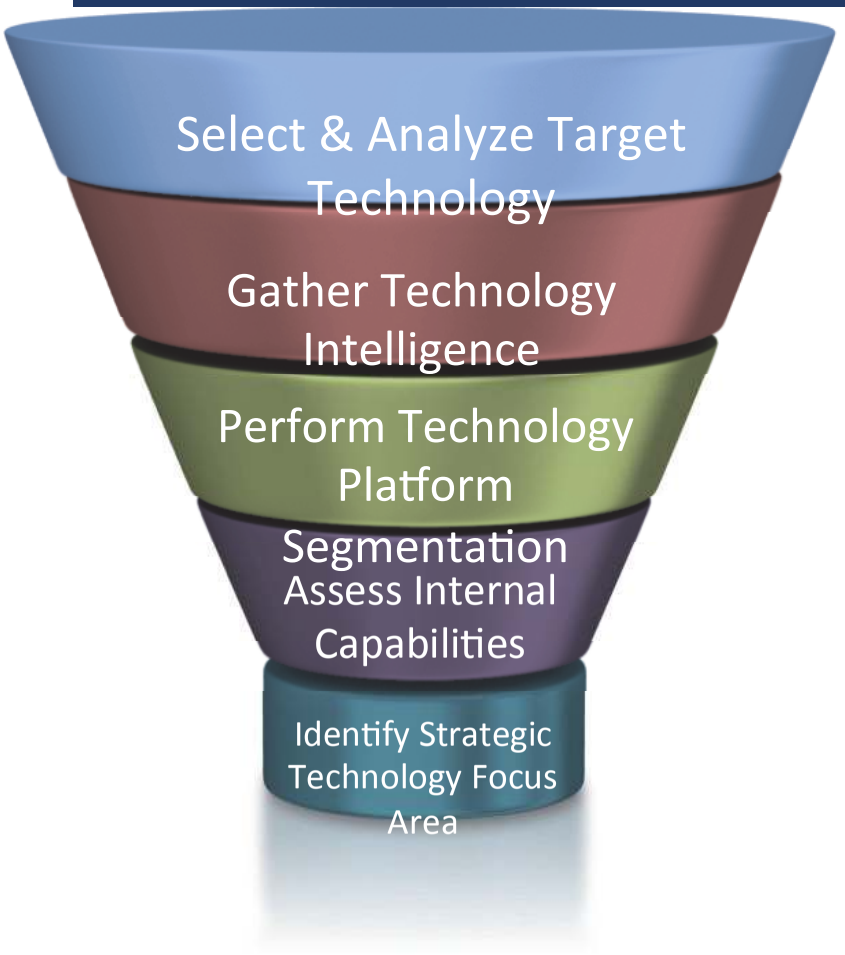
- Tampa Bay's Largest Public Company
- Founded in Michigan, 1966
- World's Third Largest Electronic Manufacturing Services Provider
- Over 40 Million Square Feet of Manufacturing Space
- Over 90 Sites on Four Continents
- Tenured Management Team
- Over 180,000 Dedicated Employees
- FY 2013 Revenue $18.3 Billion

What Is Technology Intelligence & Analysis Process (TIAP) ?

- A flexible framework or process, for collaborative open innovation
- Development of a community of internal and external stakeholders
- A gathering of best ideas for technical and business analysis
  - Intelligence crowd sourcing
- The proactive investigation of strategic topics that would impact Jabil – new revenue streams
- It utilizes stakeholder inputs to directly influence future R&D projects

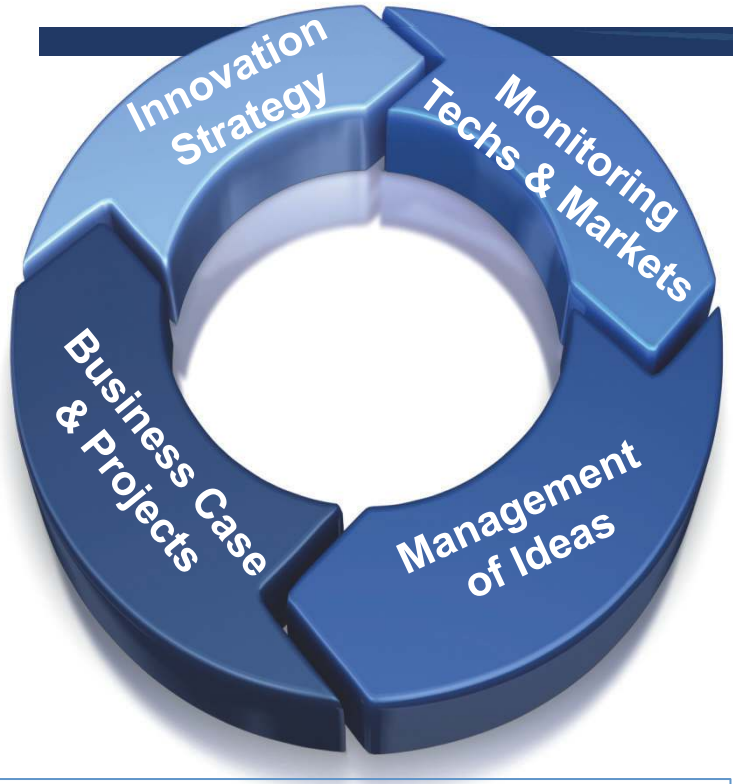


Why Was the TIAP Process Developed?



- To shift our thought process from the marketplace today and look to tomorrow with:
  - –Proactive Thinking
  - –Building Thought Leadership
  - –Enabling Customers to Market New Types of Products
  - –Think Like an OEM, behave like an ODM
- To provide a methodology to identify technologies, market potential, gaps, and prospective end customers and a predictive success "innovation factor"

TIAP Objectives



Building an innovation pipeline to enable the execution of strategic targets asking questions such as:

- What types of products should we manufacture next?
- What technologies does Jabil need to develop and master to manufacture these products?

- To formalize the research and selection of strategic projects
- To Identify technologies for pursuit
  - Evolutionary sustainable
  - revolutionary innovative
  - Aligned with long term strategic planning with most impact to Jabil
- Establish mechanism to communicate tech leadership
- Develop structured process to assess technologies
- Drive synergy and cross selling across Sectors/Bus
- Provide a formal recording of tech research, tech intelligence communication, and our decision making process
- Establish IP assets
- Initialize capability innovation pipeline to enable the execution of strategic targets

The TIAP Process Flow

Evaluations are conducted to determine if the development and adoption of the identified strategic technology focus areas are:

"Evolutionary and/or Revolutionary"

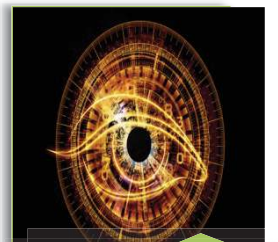
Gather Technology Intelligence

+

Select & Analyze Target Technology

Perform Technology Platform Segmentation

Assess Internal Capabilities

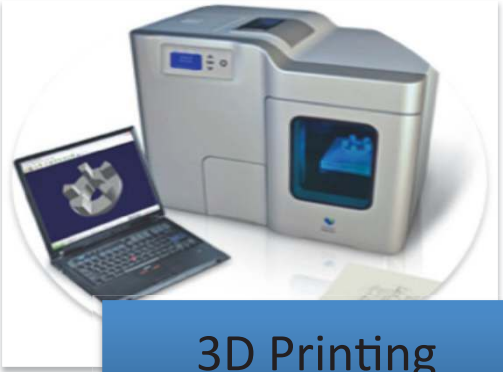


Identify Strategic Technology Focus Area

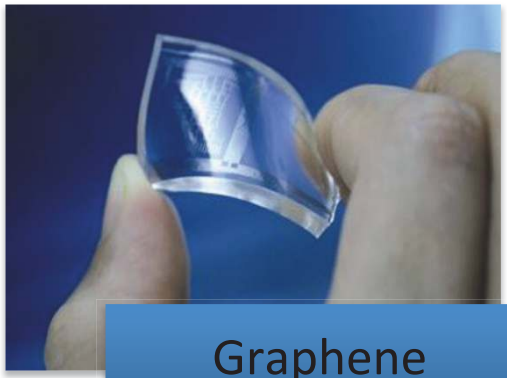
Evolutionary Technology Focus Area

Revolutionary Technology Focus Area

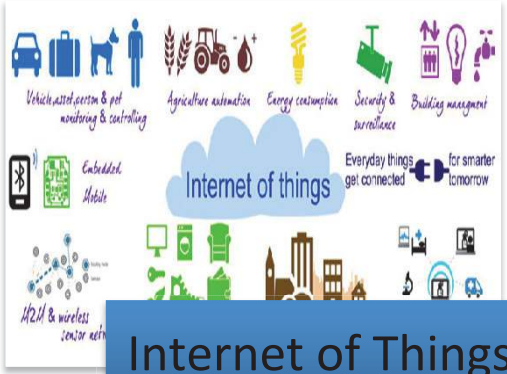
Examples of TIAP Topics



3D Printing



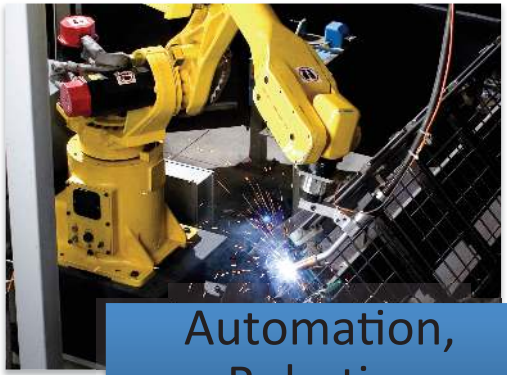
Graphene



Internet of Things

Driverless Cars

Bendable Displays



Automation, Robotics

Case Study: ONR Research Opportunity with Small Business Partner

- Partners
  - Prime: Small business entity
  - Technology Collaborator: Large University in Midwest
  - Scale up Partner: Jabil
- Target: Incubate design and manufacturing technology for conformal electronics with primary focus on aircraft lifespan monitoring
  - Jabil's role is to demonstrate large scale high volume manufacturing capability after technology reduction-to-practice to bolster defense entity confidence for manufacturing capability
- Tasks:
  - Create technical proposal & support prime submission to defense entity to enable award win
  - Support execution of project deliverables
    - Demonstrate low-cost deposition of passive and active devices on large-area thin films
    - Demonstrate integration of thin-film sensor (e.g. interconnection) to a commercial off-the-shelf (COTS) thin-film power source
    - Demonstrate cost benefit to defense entity
- Responsibilities:
  - Prime: Project Management, technical concepts, design, and test methodology
  - University: Technology consulting, materials research, and early stage prototyping
  - Jabil: Design for manufacturing, test development, and scale up process design
- Status: Proposal reviewed, accepted & under ONR directed modifications before project launch

Case Study: UAS Engine Development with Small Business Partner

Jabil / XRDi Relationship

- Jabil engaged in MFE June 2012

- Applications:
  - Unmanned Aerial Vehicles
  - Unmanned Ground Vehicles
  - Auxiliary Power Units
  - Marine
  - Space

- The UAS industry is in need of a durable, reliable propulsion system that is Multi Fuel capable for the small class UAS systems.
  - Jabil understands this need and has created a team of industry experts fully focused on providing the needed solution that meets the requirements of UAS flight in this class.

- Jabil has the capacity, capital, and resource to ensure this need is met.
  - Our reputation is what we built our company upon and our reputation will ensure our success in providing the market solution for UAS propulsion.

JABIL

- As one of the world's largest manufacturers of **consumer** drones, Jabil has its finger on the pulse of technology and its eye on future markets, positioning its customers to dominate the autonomous and airborne future.
- The drone market is expanding into the Internet of Things (sensors, cameras, navigation) and Wearables Market
  ->flying, connected & wearable hobby drones.
- Jabil is investing in printed electronics, sensors, attachment methods, cameras, machining, engines, and other leading-edge technologies and processes to provide seamless capabilities.
- Supply chain management, at the core of Jabil's business, still remains the primary reason for Jabil's success.

Aim Higher.

www.jabil.com

Jabil's unique combination of global expertise, ingenuity, analytics and financial performance has contributed to the success of world's most well-known brands. We help companies design, build and take their products to market quickly, affordably and efficiently. But more than that, Jabil helps customers intelligently design their supply chains to be agile, economical and effective even in uncertain times. And that is what leads to long-term success.

JABIL

DEFENSE & AEROSPACE SERVICES

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Summary Slide

- "What does it take to build the future? …innovation, vision, and inspiration"
- Jabil's Technology Intelligence and Analysis Process is revealing new methods, materials, and technologies to provide innovation to our customers (and market sector participants).
- Jabil's collaborating with both public and private enterprises targeting Small Businesses as partners
- Jabil's Advanced Technology lab is actively seeking new business opportunities with DARPA, IARPA, and USSOCOM as a commercialization partner.
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Questions??

Please Complete Seminar Evaluation