

Growing a Medical Device Company, The Medmart, and Where we are Going with a Medical Device Industry in NE Ohio

Cleveland Engineering Society
February 19, 2008

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My Goals—Grow 3 New Industries in NE Ohio

- **Brain Industry (Medical Devices)**
- MEMS
- Aerionics

Agenda

- Intro to CleveMed and Orbital Research
- Medical Mart
- Cleveland's Economy and the Role New Bio Companies can Play



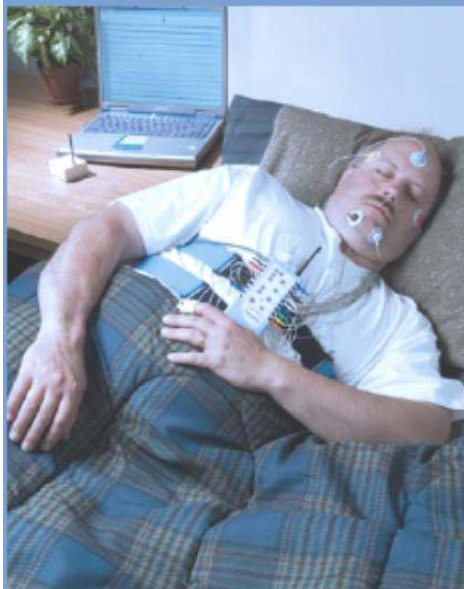
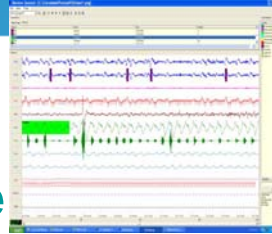
Introduction to
Cleveland Medical Devices Inc.
and
Orbital Research Inc.

Cleveland Medical Devices Inc.

- Founded in December, 1990
- Use the Thomas Edison Model, Invention Factory
- Stock owned by employees
- 2007 Sales > \$ 6 Million, Profitable
- Awards
 - **Inc. 500**, 2000, 812% five year growth
 - **Inc. Inner City 100**, 2000 (34), 2001 (15), 2002 (27)
 - **Weatherhead 100**, (NE Ohio), 1999, 2000/01/03/04/05/06
 - **Ohio Emerging Technology Award**
 - **Tibbetts Award**, Best SBIR Companies (2002/2006)
 - **NIH Success Story** (NIH Website)
 - **Stevie**, Best Product Designer-2007 (NY Post-America's Business Oscars)
 - **Best Neuro Product-Kinesia** Neurotech Business Reports, 2007
 - **Best Product in North America-Kinesia**, Frost & Sullivan 2008

CleveMed's Medical Products

Sleep Disorders – Crystal 20-S/B, SleepScout, Sapphire, iPSG, PSG@Home



Diagnoses sleep apnea, insomnia, narcolepsy,....
Easy and simple setup. Small, sophisticated circuitry, wireless capability
Complete software review and analysis package

Brain Monitoring – Crystal 20-E



- Wireless monitor to detect patient neurological status in ER.

Movement Disorders - Kinesia

- Wireless monitor to quantify the symptoms of Parkinson's disease at home / office



Pressure Ulcer Mgmt - PressoreStep



CleveMed

Cleveland Medical Devices Inc.

CleveMed's Research and Teaching Products

CleveLabs™ Laboratory Course System

BioCapture™ RESEARCH SYSTEM



CleveMed
Cleveland PROTECHNICS, INC.

AIHA SPIR Conference, Las Vegas, NV, Feb 28, 2007

When you learn on CleveLabs, you enhance your Career



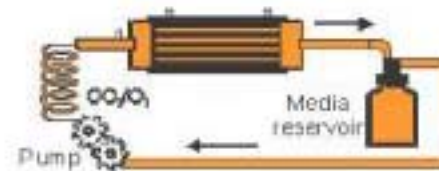
CleveMed's Spin-offs



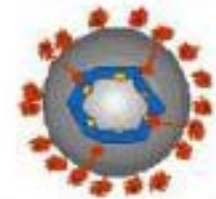
Flocel

www.flocel.com

Dynamic In Vitro
Blood Brain Barrier Model



DIV- BBB System



Cross Section of
A single lumen



NeuroCAP™

An objective assessment of sleepiness based on the integrated analysis of EEG and task performance.



NeuroSENSE™ Monitor

Peri-operative monitoring of the Central Nervous System (CNS) during Anesthesia

CleveMed

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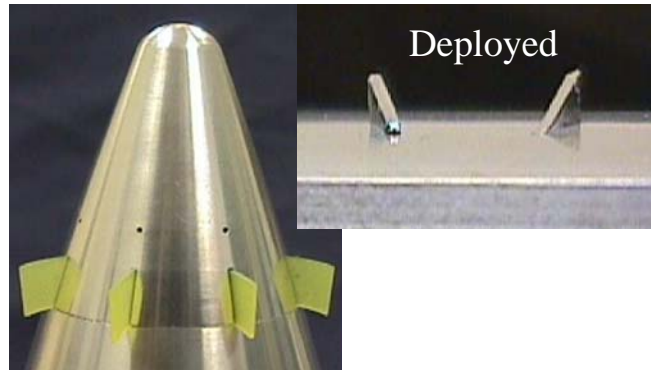
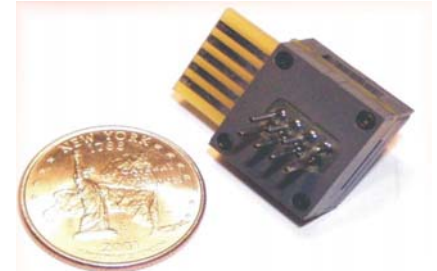
Orbital Research Inc.

- Founded in December, 1990
- Use the Thomas Edison Model, Invention Factory
- Stock owned by employees
- 2007 Sales ~\$ 4 Million, Profitable
- Awards
 - **Inc. 500**, 2001,
 - **Inc. Inner City 100**, 2001/2/3/4
 - **Weatherhead 100**, (NE Ohio), 1999, 2000/01/02/03/04/05/06
 - **Tibbetts Award**, Best SBIR Companies (2007)

Orbital Research's MEMS* Developments

- Micro Valves

- Braille Arrays (Computer Monitors for the Blind)
- Deployable Micro Vortex Generators Flight Actuators for
 - Aircraft
 - Missiles
 - Projectiles

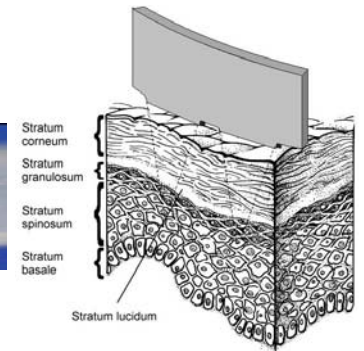
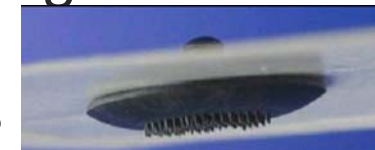


- Dry Electrodes

- Neurology and Cardiology Electrodes that don't require preparation or pastes/gels that dry out

- High Temperature Pressure Sensors

- Pressure sensors for Diesel, Gasoline, and Turbine Engines



*MEMS-Microelectromechanical Systems

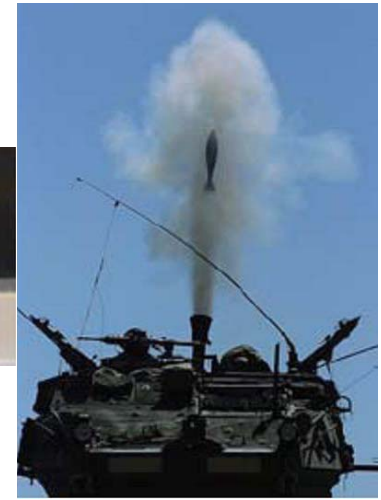
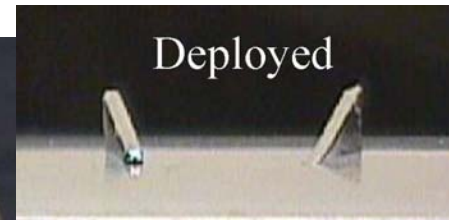
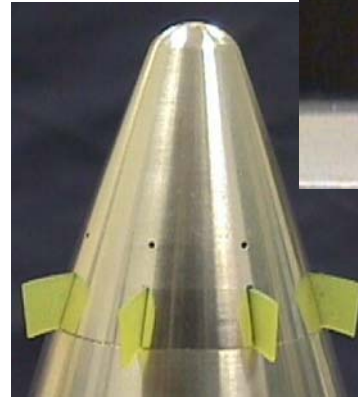


CleveMed
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Orbital Research's Aero Controls - Aerionics

- Deployable Flow Effectors

- Aircraft
- Missiles
- Guided Projectiles



- Plasma Controls



- Micro Air Vehicles



- Aircraft Protection

*MEMS-Microelectromechanical Systems



The Medical Mart

Cleveland Engineering Society, February 19, 2008

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Top 20 US Convention Centers

There are over 12,000 Trade Shows in the US Every Year

City/Convention Center	Exhibit Space (sq. ft.)	Expansion Plans	Total	Site (Acres)	Parking on-site or contiguous (No. of cars)
Chicago CC (McCormick Pl.)	1,850,000	500,000	2.35 ml.	100+	3-5,000
New Orleans CC (Morial)**	1,300,000		1.3 ml.	100	2,000
Orlando CC (Orange Co.)**	1,050,000	250,000	1.3 ml.	125	3,500
Las Vegas CC**	970,000	425,000	1.4 ml.		4,800
Atlanta CC (GA, Wd. Cong.)**	950,000	500,000	1.45 ml.	100+	5,000
Las Vegas CC (Sands)**	935,000	105,000	1.04 ml.		1,400
Los Vegas CC	867,000		867,000	34	6,000
N.Y.C. CC (Javits)**	760,000	540,000	1.3 ml.		
Anaheim CC**	670,000	330,000	1.0 ml.	75	5,500
Orlando CC (Osceola Co.)*/**		2.1 ml.	2.1+ ml.	100+	5,000
San Diego CC**	630,000	500,000	1.1 ml.	27	2,200
Boston TCC*/**	600,000	400,000	1.0 ml.	60	2,000
Dallas CC	600,000	300,000	900,000		1,300
Kentucky Expo CC	793,100		793,100		19,000
Miami Beach CC	502,800	250,000	752,800		2,800
Washington CC*/**	735,000	no	735,000	17	297
Cobo CC (Detroit)	700,000		700,000		9,248
Cervantas CC (St. Louis)	502,300		502,300		5,900
New Atlantic City CC	500,000		500,000		7,600
Brown CC (Houston)	451,500		451,500		3,000
*New facility					
**Expansion studies or expansion underway					

Cleveland's Current Convention Center has 375,000 SF and parks 6,000 cars.

The Medical Mart- What can it do?

- Per Christopher Kennedy, Merchandise Mart Properties Inc¹
 - 50 medical-related trade shows/conferences annually
 - Over 300,000 visitors a year (6,000/week on average)
 - Create \$330 million in "direct economic impact."

(This Goal is an Order of Magnitude too Small)

Per Free Times $705 - 300 = 405 / 10 = \sim 40$ shows/Yr. ²

1. Per Christopher Kennedy, president of Chicago-based Merchandise Mart Properties Inc Medical Mart, Cleveland "could" attract "as many as" 50 medical-related trade shows and conferences annually, with over 300,000 visitors a year (that's 6,000 per week on average) and create \$330 million in "direct economic impact." Kennedy's presentation says there are 571 medical-industry events, and assumes each would come to Cleveland once every 10 years.
2. On July 25, at clevelandmedicalmart.wordpress.com, a promotional Web site for the project set up by the GCP and the CVB, CVB employee Lorelei Sugano offered a link to <http://meetings.primediabusiness.com/search.asp> as evidence of the wealth of potential business. She says there are 705 medical meetings and conferences on the list for 2007, and that she counted 170 not associated with a particular institution or locale. But Free Times counts close to 300 on this list that would seem extremely unlikely to consider Cleveland even every 10 years for various reasons, including routinely meeting in various international locales. That would include gatherings of groups such as the California Society of Anesthesiologists, the Toronto Academy of Dentistry and the Virginia Health Care Association, or a series of seminars sponsored by the Wake Forest University School of Medicine, all held in Winston-Salem, North Carolina, where the university is located.

What Does a Convention Center Cost Comparison to Boston



Boston Convention Center
1,900,000 Sq. Ft.
\$822,000,000
\$432/Sq. Ft.

- This 1.9 million SF convention facility includes a 600,000 SF exhibition hall, a 60,000 SF ballroom and 200,000 SF of meeting rooms. The project also includes parking for 2,000 vehicles and ancillary/support space totaling 880,000 SF.
- The attendees at all Conventions at BCEC are expected to book more than 620,000 hotel room nights and generate more than \$541 million in estimated economic impact to the region **(Cleveland will be about 1/2 of that)**
- Medical events at the BCEC are the top generators of economic impact by industry with a projection of nearly \$95 million, nearly 85,000 attendees, and more than 121,000 hotel room nights.
- **Thus, Cleveland Expects to get about 3.5 Times More Medical Shows than Boston**

Merchandise Mart Background & Comparison

Merchandise Mart

- Typical Mart sells furniture, consumer goods
- Buyers: 100,000s to millions, go to look
- Sellers: 100,000s
- Sales size: \$1000s to \$10,000s

Medical Mart

- Medical Mart sells medical goods to medical buyers
- Buyers: 1000s to 10,000s, sellers come to them
- Sellers: 1,000s
- Sales Size: \$10,000s to millions

The Medical Mart – The Facts

- The Current Convention Center costs the County about \$6.5 M/Yr
- The new \$0.25 per \$100 sales tax will raise about \$42 M/Yr
- \$42 M/Yr for 20 years is about **\$840 Million for the Convention Center**

The Medical Mart – The Facts (continued)

- The Convention Center will be built with **public funds**
- The Medical Mart will be built with **private funds**
- However, when approving the Convention Center tax, it was linked to the Medical Mart

The Medical Mart – The Location

- The Medical Mart people are arguing for a University Circle location
- County people are arguing for a Downtown location, close to the Convention Center

The Medical Mart – What Do We Want

What is the Vision?

- A “Medical Higbees”
(or a “Medical Sharper Image”)
 - **A few thousand jobs**
 - **\$ 300 Million into the economy**
- Or do we want to Build an Industry
 - **Create Jobs** (over 20,000 jobs)
 - **Create Wealth** (>\$3 Billion into the economy)

The Medical Mart – The Issues

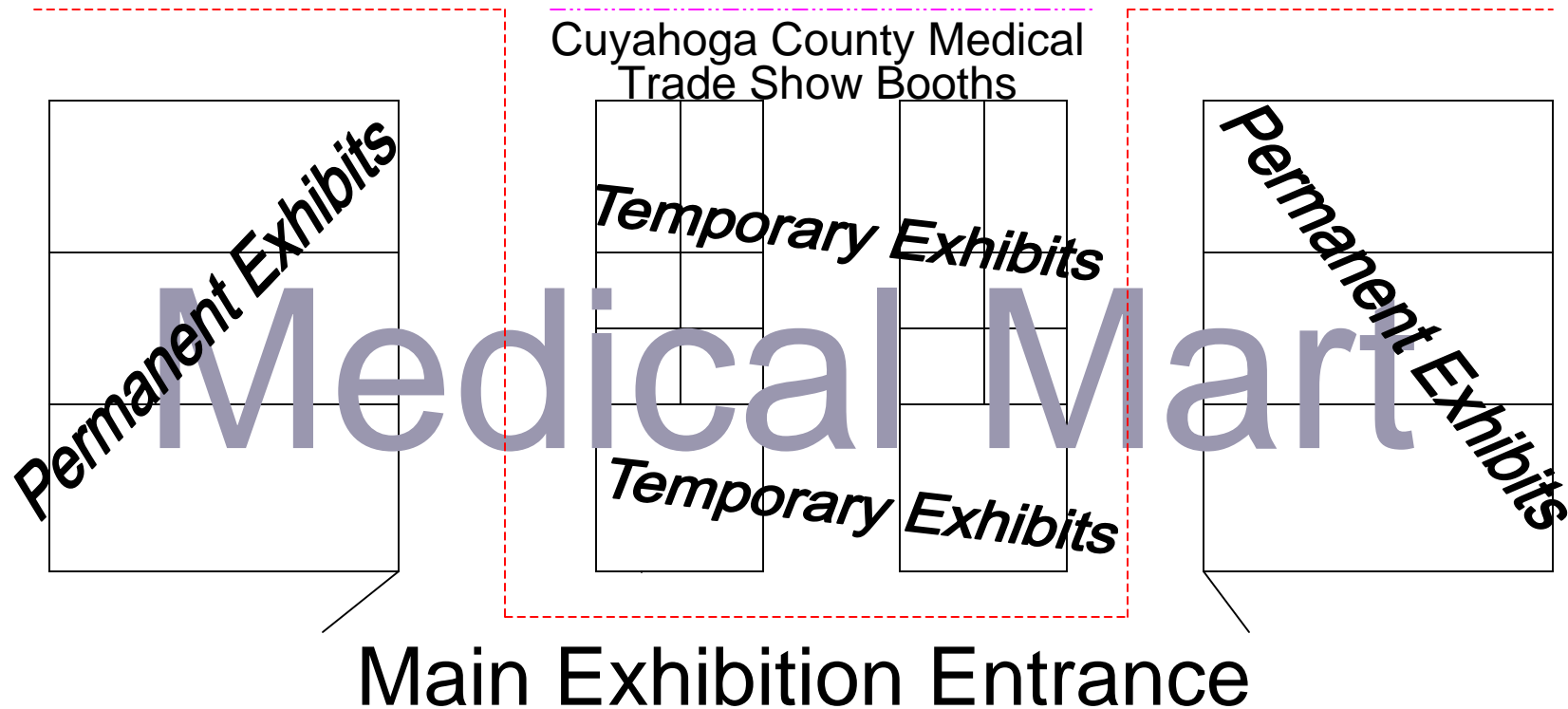
- If we want an industry, we need incentives
 - New Startups
 - Move in New Companies or Divisions
 - New Capital
 - New Partnerships
- A “Cheap or Free” Marketing Platform for these new companies is one very valuable incentive.

The Medical Mart – My Opinion

- Needs to be integral w/ Convention Center
- Front and Center Location – Need to pass through the Medical Mart to get to the Convention Trade Show Floor
- Cheap or Free Medical Trade Show Space
 - Lottery for Show Booth/Meeting Space by Cuyahoga County Medical Companies
 - Run by BioEnterprise
 - Provides Space to Cuyahoga County Companies
 - Unused Space can be Sold by BioEnterprise to Provide Support for New Companies

The Convention Center Can Carve Out a Section for Cuyahoga Medical Companies

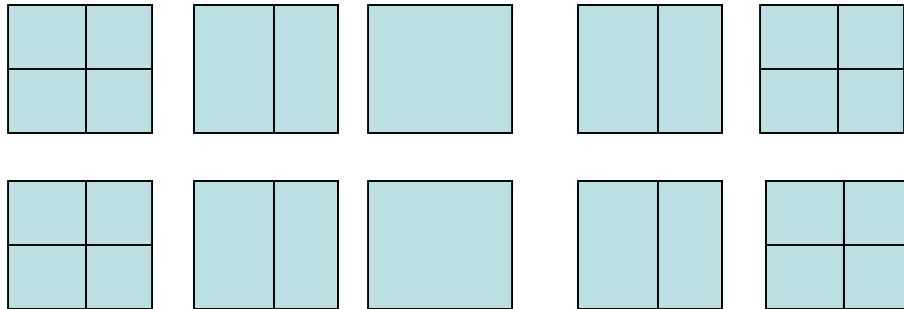
Main Exhibition Hall



What Should the Cuyahoga Medical Trade Show Facility Look Like

- It should have about 26-52 booths (The goal should be ~250-300 Cuyahoga County medical device companies that could get subsidized booth space at about 10-20% of the shows)
 - Available by Lottery, Controlled by BioEnterprise
 - 16 each 10' x 10' booths
 - 8 each 10' x 20' booths
 - 2 each 20' x 20' booths
- It should have a meeting facility of about 6,000 SF
 - Available to be used as one large area
 - Or split up into smaller rooms (eg: 10-600 SF rooms)
- They should be available to the medical companies at the incremental cost of using the facilities **CleveMed**

What Should the Cuyahoga Medical Trade Show Facility Look Like



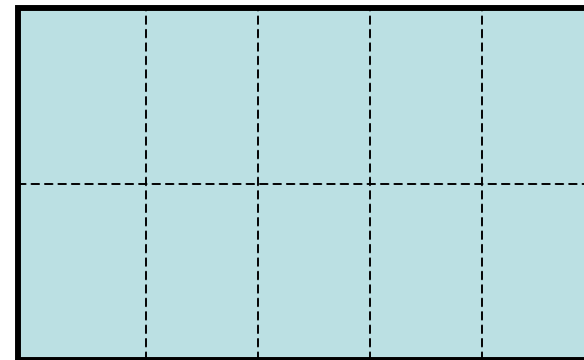
Cuyahoga County Medical Trade Show Booths

At the Entrance to the Exhibit Hall
And Integral with the Medical Mart

- 16 each 10' x 10' booths
- 8 each 10' x 20' booths
- 2 each 20' x 20' booths

Total, incl. aisles = ~9,000 SF

- Total Cuyahoga Medical Trade Show Facility = 15,000 SF
- At \$450/SF, Total Cost = \$6.48 Million
- < 1% of the Cost of the Convention Center



Cuyahoga County Medical Meeting Rooms

Near the Exhibit Hall

- One 6,000 SF Room
- Temporary Partitions
- Subdivide into 10

Total = ~6,000 SF



Medical Device Industry in NE Ohio

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Cuyahoga County, 2006 Census Estimates

Population:	1,314,241
Businesses	36,990
Employees	698,597
Percent over 65 yrs old	15.1%
Households Retired (OH)	18.9%

Source: <http://quickfacts.census.gov/qfd/states/39/39035.html>

2002 Cuyahoga County Economy

Manufacturers shipments	\$19,827 Million
Wholesale trade sales	\$23,055 Million
Retail sales	\$15,483 Million
Accom & food services	\$ 2,132 Million
Federal spending, 2004	\$10,166 Million

Cuyahoga County Economy ~ \$70.663 Billion

Gross Regional Economy ~\$171 Billion

Source: http://www.riderta.com/pdf/transit2025/Transit_2025_March_2006_Final_ch2.pdf
<http://www.bioenterprise.com/assets/teamneoeconreviewdec2007.pdf>

What Do We Need

The County had ~93,173 Manufacturing Jobs in 2003
~22,000 Auto & Parts Mfgr. Jobs in Cuyahoga County

Source: http://www.riderta.com/pdf/transit2025/Transit_2025_March_2006_Final_ch2.pdf
<http://www.clevelandfed.org/bsr/Conditions/v7n1/autos.cfm>

With a \$70+ Billion Economy, and ~700,000 Jobs

To be significant, we need to create about 5% of
the economy, or:

- \$3.5 Billion of Sales
- 35,000 jobs

This will more than replace the auto industry

Where is the Medical Device Industry in 2008?

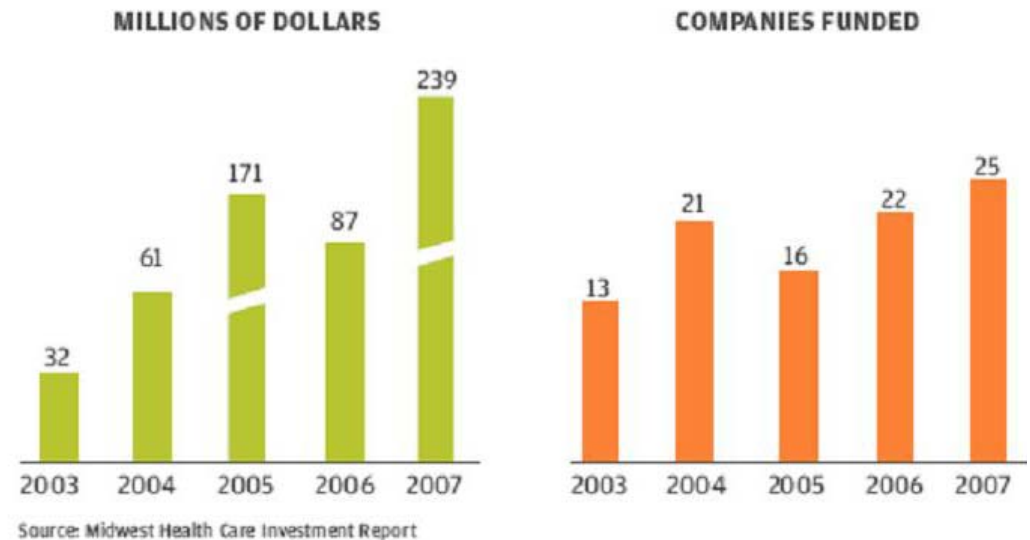
From 2003-2007, 70 health care start-ups in Greater Cleveland have attracted over \$600 million in new equity funding and another 35 have attracted \$70 million in NIH SBIR grants.

Nearly 500 firms that produce goods or provide services into the health care industry exist in the region. These include large companies such as Philips Medical, Hitachi, Invacare, Steris, and Boehringer Ingelheim (Ben Venue) as well as an array of smaller firms. Medical device firms represent more than half of the companies.

Source: Cleveland: The Nation's New Bioscience Innovation Destination: BioEnterprise Report 2008

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HEALTH CARE EQUITY INVESTMENT



There are about 280 Medical Device firms in the NE Ohio

I Estimate about 150 in Cuyahoga County

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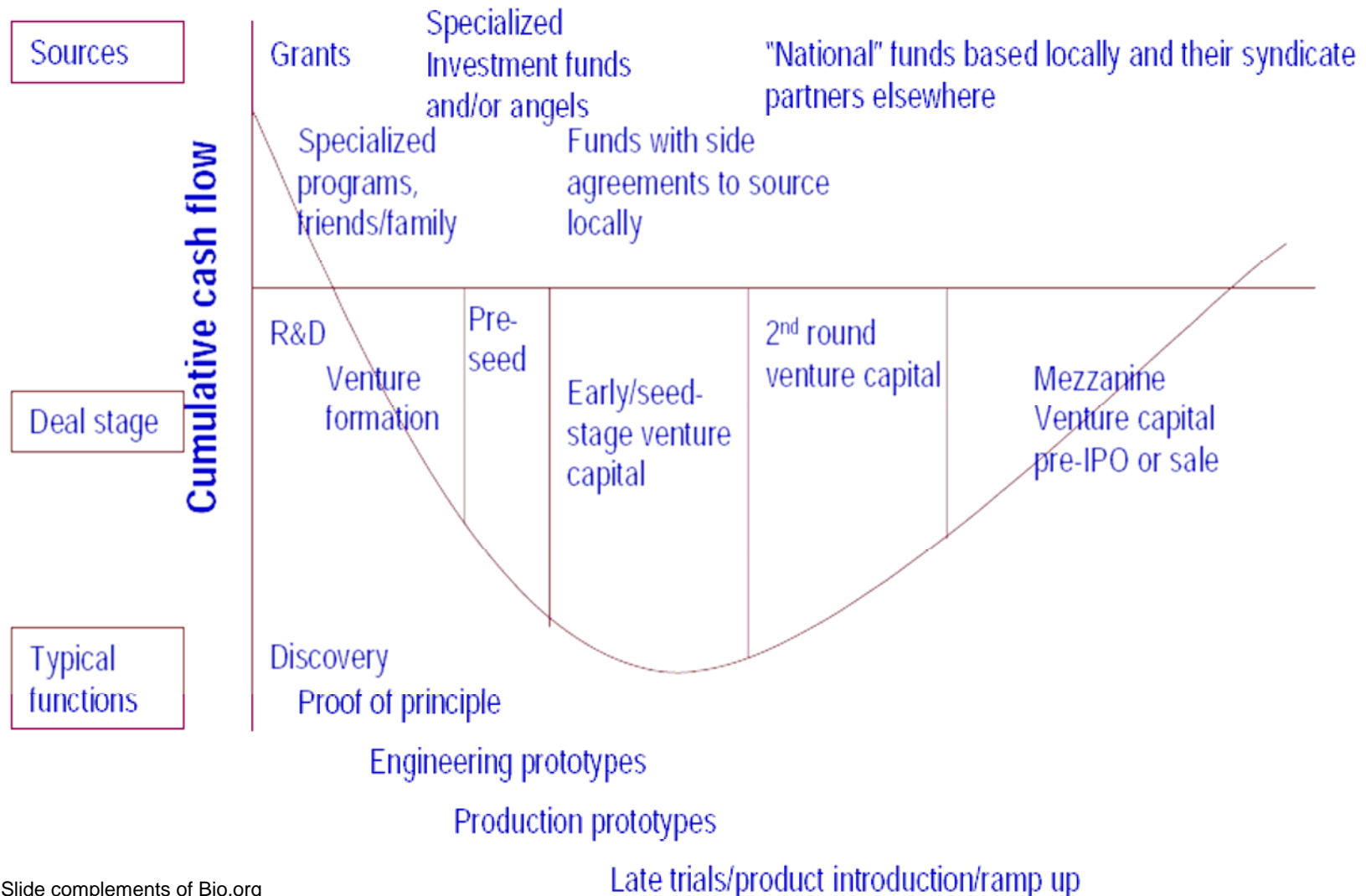
Cleveland Medical Devices Inc.

Schmidt Rules of Thumb for Company Start-Up

<u>Product or Service</u>	<u>Cost to Launch</u>	<u>Time* (Years)</u>
Simple Service	\$100K to \$1M	1-3
Simple Product	\$5M+	2-10
New Industry Products	\$5 M to \$50 M	7-15
Drug	\$1 billion +	10-20

Time to Profitability (self sustaining)

Capital Funding Cycle



Slide complements of Bio.org

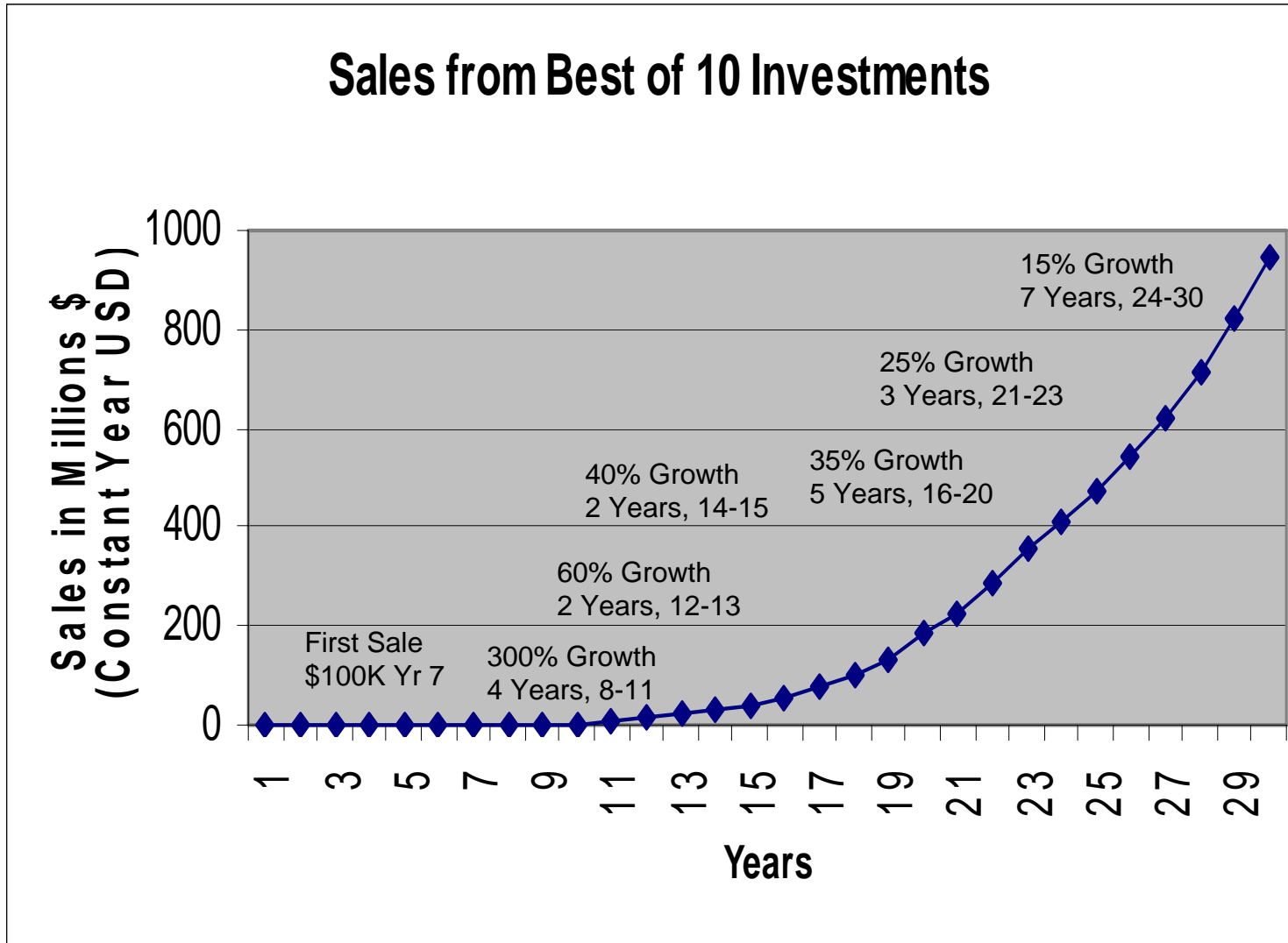
The Cleveland Medical Economy Growth Model

The Schmidt Model

- Start 10 companies per year with \$0.5 M ea, 2 employees ea.
- After 2 years, ½ are broke
- 5 companies in Yr 3 need \$1.5 M ea and have 5 employees
- By Yr 4 only 3 companies survive. They need \$4 M each and have 8 employees
- By Yr 7 only 2 companies survive. They need \$5 M each and have 10 employees.
- In Yr 9, one company will be worthy of an additional \$9M.
- By Yr 10 one company will be at 27 employees and will grow rapidly.
- The other company will have 10 employees and will grow slowly.

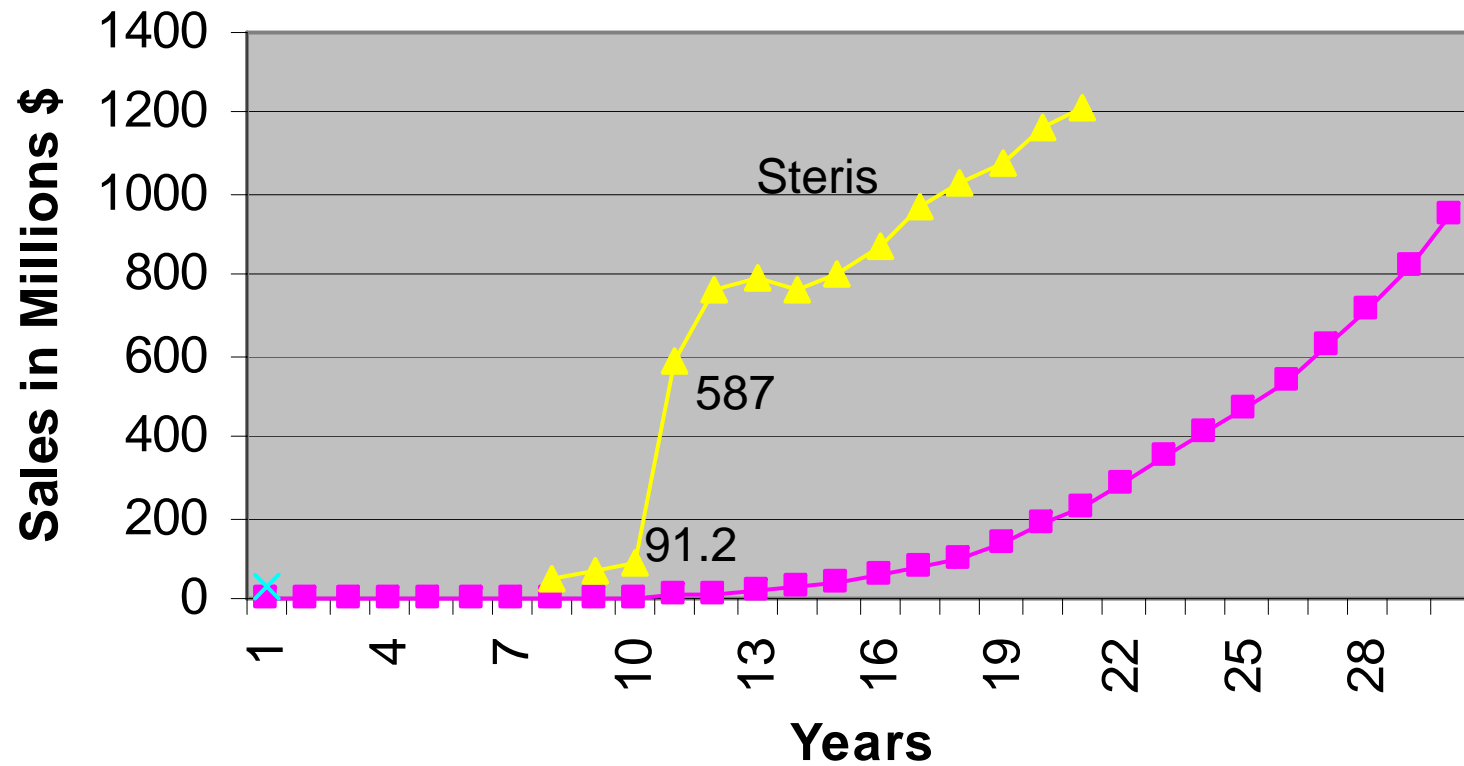
Assumed Curve for Best of Investments

YR	Sales \$M	% Growth
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0.1	0
8	0.3	3.00
9	0.9	3.00
10	2.7	3.00
11	8.1	3.00
12	12.96	1.60
13	20.76	1.60
14	29.03	1.40
15	40.64	1.40
16	54.87	1.35
17	74.07	1.35
18	100	1.35
19	135	1.35
20	182.2	1.35
21	227.8	1.25
22	284.8	1.25
23	355.9	1.25
24	409.3	1.15
25	470.7	1.15
26	541.3	1.15
27	622.6	1.15
28	715.9	1.15
29	823.3	1.15
30	946.8	1.15



Model Can Achieved

Steris Vs. Schmidt Model



How Fast Can the Industry Grow?

- Model Assumes 10 Companies Started Per Year for 30 Years
- Model Assumes \$43.5 Million of Seed Capital Per Year
- If 1/10 of Companies Meet Fast Growth Path, After 30 Years
- We Create \$6.327 Billion in Sales and 22,548 Jobs

Can the Model Work

- Can We Raise \$43.5 Million of Early Stage Capital Every Year?
- Do We Have Investing Angel Groups that can Support This?
- Do We Have a Community That Can Support Fast Growth Firms? (Incubators, Training, Facilities, Equipment, Education, Banks)
- Have We Tested The Model? Does It Reflect Reality?

Summary

- A Medical Mart, done right can be a significant boost to the Medical Device Industry
 - Contiguous, and at the entrance to the trade show hall with meeting rooms
 - Cheap or free to Cuyahoga medical device manufacturers
- We need to support the early stage capital formation and tech transfer for new companies
- We need a bigger vision

QUESTIONS?



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