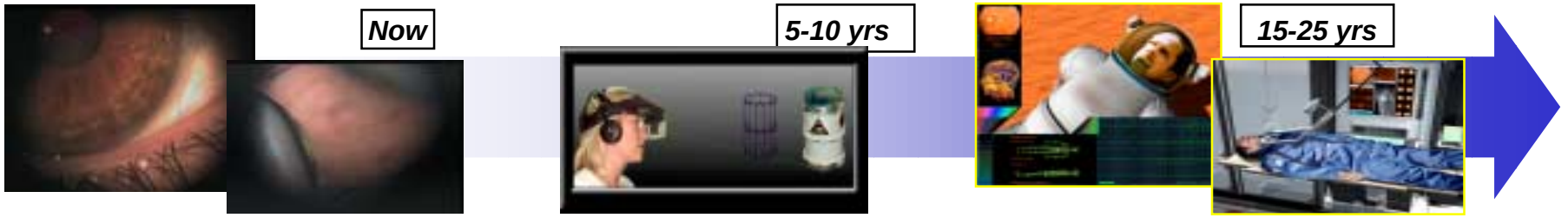
“Breakthrough” Space Biomedical Technologies



Modified Commercial-off-the-Shelf Medical Devices, Real Time Telemetry of Medical Data and Images

Wearable Information Systems, Compact and Integrated Diagnostic Systems, Limited Decision Support Systems

Wearable Diagnostic and Therapeutic Systems, Interactive Synthetic Medical Consultant, Limited ‘Tricorder’ Capabilities

	Now	5-10 yrs	15-25 yrs
Application Missions:	LEO Missions	Missions at LEO and Beyond	Missions beyond LEO
Metrics: *Cost (price)* *Trip Time*	**Unplanned Mission Return ($500M) Eliminated**	**100X Increase in # Machine Decisions/ # Human Decisions**	**1000X Increase in # Machine Decisions/ # Human Decisions**

Objective: To increase crew autonomy at an acceptable level of mission risk

Leading Candidates with potential high payoff (further refinement required):

- Thinking Medical Systems/Decision Support Systems
- Blood Substitutes
- Non-Invasive, Comprehensive Blood Analysis
- Compact,High Resolution, Non-Invasive Imaging
- Unobtrusive Physiological Monitoring
- Medical Diagnostic Nanotechnology
- Therapeutic Intervention Nanotechnology

Current Funding for NASA Space Biomedical Technology Development* (source):

- FY’99 $1.265M
- FY’00 $2.2M

* for operational use within 5 years

Recommendation

Sponsor cutting-edge research in academia ($10M/yr). Collaborate and co-fund complimentary research with the DoD and DoE ($25M/yr). Identify medical industry leaders that can develop mission unique technologies ($20M/yr). Increase funding as technologies near space flight operational status.