CRAIDO – Community Rapid Response to Infectious Disease Outbreaks and other Emergent Critical Processes (ECP)

The CRAIDO network is an open-ended installation of highly reconfigurable labstations for both stationary and mobile use in the mission of NBIC and related initiatives, programs and responses to national, regional and local public health threats. CRAIDO comprises a developed and tested suite of instrumentation, software and protocols meeting the requirements for BCON and BCOP and provides a functional Integrated Surveillance Program (ISP) that serves government agencies, health provider management, emergency response agencies, and most of all, the communities that comprise our nation.

CRAIDO provides today several core component with respect to biothreat detection, diagnostics and response, spanning from very early warning to public notification and active threat mitigation. It has been designed with a focus upon biothreats and specifically infectious diseases but it is inherently adaptable, in its mobilized version particularly, to a very broad range of CBRNE threats and events including social unrest and conflicts linked with panic and disinformation. CRAIDO thereby addresses the goals that NBIC aspires to accomplish and must implement within the immediacy of the H1N1 pandemic and related national risks, but it provides a logical, extensible, and extremely economical toolset for future threats.

CRAIDO research and development began well before 9-11 and 2001, within the joint academic and corporate R&D community. It now encompasses mature, multispectral, fault-tolerant integration of biosensors including advanced RT-PCR and novel mutation anomaly detection, identification and tracking (MADIT). Within the overall system, ready now for piloting and introduction into multiple sites in the remaining months of 2009, there is the Virtual Sample Repository Bank (VSRB) for realtime management of novel infectious disease samples (such as the emergent H1N1-2009 virus from Spring, 2009).

CRAIDO has been developed by a team well-equipped, experienced, validated and recognized (within scientific (including medical, public health and cognitive/computing) circles for tackling precisely these classes of emergent, nonlinear biological and social problems. Unlike certain other systems being proposed, CRAIDO uses contemporary information technology (such as active-intelligence data collection and information extraction from social networks and organizational/enterprise databases). Its foundation is upon medical and epidemiological data including rapid diagnosis of suspected outbreaks, detection of mutations within strains (e.g., H1N1+H5N1 variants), strong realtime correlation with the medical and healthcare infrastructure, and delivery of reliable, practical tools. These tools include manageable information portals and platforms that can be used by diverse populations of responders operating under stress and weakened infrastructures. In many ways CRAIDO offers a long-awaited departure from a generation of post-911 system models that lean toward IT/data-intensive, complicated-infrastructure, high-cost systems. CRAIDO addresses what healthcare providers and emergency responders identify as high priorities for ECP situations. It is not derived from a “Total Information Awareness” approach but rather from pragmatic, abductive logic plus proven instrumentation and sound medical practice.

Functions provided by CRAIDO labstations and the integrated network of such units include: rapid physical and informational outreach to sources and victims of infection, rapid intake of samples, rapid multiplexed PCR and immunoassay and third-level diagnostics, mutation and dispersion analytics, rapid distribution of information on multiple scales (e.g., planners, medics, responders, public) and tracking-management of physical samples (VSRB). Software is principally COTS and open-source. Instrumentation and bioassays include FDA and other appropriate approvals. Details, demonstrations, and a pilot system can be made available for DHHS, DHS, and all interested parties.

The mobile lab units are designed with full internet communications including GPS and GIS enabled portable instruments, backup emergency power, and onsite public education capabilities (onsite “sideboard” webcasts). The logistics and assembly-train-maintain process (for deploying CRAIDO to a network of cities, state/local health departments, airports, seaports, transit hubs, food processing plants, high-employee-count facilities, and other obvious need-centers) has been planned, developed and readied. The development “consortium” team encompasses experts from Vanderbilt, UNC, GT, UT, ORNL, MSSM, many health depts. and private companies/labs. Classified work components can be undertaken also if or when required. CRAIDO is one of the most-ready biosecurity solutions for America.

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