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Platforms for the design of platforms: collaborating in the unknown

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Table 2: Main Features of the Design Process

	Biomaterials	ITRS	Cockpit	Biotech
Goals	Build a new industry	Support industry growth	Industry growth through innovative cockpits	Build new research fields
Inputs	“Building with Hemp” + a list of potential partners + some isolated experiments	Several issues regarding concepts and processes in the non-competitive domain + main industry players (suppliers, manufacturers, users)	“Future cockpits”. A single player at the beginning: a cockpit supplier.	New instrument concept (actionable phenomenon) + an original research question
New capabilities	Yes: characterization of materials, processes, usages, the construction business	Yes	Yes: on aircraft integrator utility and constraints, on aircraft companies, on pilots, on technologies, etc.	Yes: on the research question (animals and pathologies, etc.), on the instruments underlying the phenomena, etc.
Phases	Sub-sets of one or a few partners conducting or financing experiments, research projects, validation projects, communication projects	Each partner conducts (or sub-contracts) individual investigations on clear, well-identified technological issues	In-house exploration of conceptual alternatives for cockpits. Design of cockpit simulators enabling collective explorations with aircraft integrator, companies and pilots	An original experiment with new instrument facility (+publication) Other experiments with other researchers, based on the same instrument principle. Improvement and innovation on the instrument principles
Coordination	Regular steering committee sharing results of the explorations, listing open questions to be explored, discussing possible ways and collective facility for each related exploration	Three conferences per year, with all ITRS group members. Working groups responsible for one process issue. Each group updates its related roadmap, identifies emerging solutions and pending questions	Two levels: - inside company: gathering results, orienting explorations and choosing partners - simulator level: steering committee sharing results with main partners	Two levels: - device level: steering committee (instrument manager + pioneer researchers) choosing relevant experiment to be accepted on the experimental device - experiment level: regular meetings between instrument manager and researcher
Resources	Classic association funding; partners pay for their own explorations.	Members pay for their own explorations. Collective expenses (meeting) shared	Cockpit supplier provides the simulation bench	Initial fund-raising through research contracts. Experimental devices then financed through public funding or foundations
Leading partners	Leading builders, architects, hemp transformers, lime suppliers, grouped in an association “Building with Hemp”. Growing number of members in the association. Limited and varying number of members taking part in the association’s steering committee (decreasing first and then increasing)	Main players of semiconductor industry (process suppliers, manufacturers, users such as cell phone manufacturers, PC integrators, etc.). Open participation. ITRS groups are led by designers working for semiconductor manufacturers.	Cockpit designer alone at the beginning. Then component suppliers, aircraft integrator, aircraft companies, pilots also participate (slow enlargement). Simulation level steering committee limited to aircraft integrator and cockpit supplier.	Limited to one research pioneer and instrument pioneer at the beginning. Then extended to other researchers (in the same and in different fields), to the instrument manufacturer(s), etc. Selection of participants to use the exploratory device. Steering committee limited to pioneers.
Platform	Industry platform = professional rules	Industry platform = Production process	Industry platform = validation bench for	Research field platform = new services for

output	<p>for new house-building. Core = choice of materials, process parameters, etc. Networks = material providers + builders + architects + building owners Value = new market (thanks to state guarantees for insurance purposes) + cross-sided network effects.</p>	<p>platform for next semiconductor generation Core = main technology process choices, performance level, etc. Networks = production process suppliers, manufacturers, users. Value = decrease investment risks for machines suppliers; direct semiconductor users' design efforts.</p>	<p>cockpit components Core = bench, evaluation rules, etc. Networks = components supplier, cockpit integrator, aircraft integrator, aircraft companies, pilots, etc. Value = leverage innovative technology in cockpit components, enable innovative cockpit with clear user value for companies and pilots.</p>	<p>measurement/ analysis to support efficient research in a new field Core = routinized services, including self-service; Networks = research community, instrument makers; Value = easy access of researchers to a new research field, large market for new, routinized instruments</p>
Other outputs	<p>Strategic view of the field (other hemp building opportunities) Competencies</p>	<p>Strategic view of future, emerging platforms, at multiple time horizons</p>	<p>Representation of alternative cockpit concepts Increase knowledge on user-value</p>	<p>For pioneers: better understanding of the instrument potential applications and the possible research paths</p>
Rights	<p>No fees on professional rules. Patents obtained during the exploration process are owned by the explorers</p>	<p>ITRS road map is available for free. IP obtained during the exploration is the property of the explorer.</p>	<p>Limited access to the simulator. IP for the explorers (either cockpit designer alone or cockpit designer + aircraft integrator)</p>	<p>Selective access to the experimental device. IP for explorers, shared with the instrument maker</p>