Designing the Workplace of the Future

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Program Manager Genentech
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December 2, 2014
1:30 PM – 5:00 PM
The Future of Work

- **Introduction**
- **The Evolution of Work**
  - Modern Work by the Numbers
  - New Work Modalities
  - Physical Space Interactions
- **Trends in Real Estate Planning**
  - Density
  - Use Policies
  - Technical Policies
  - Emerging Environmental Ergonomics Concerns
- **A Practitioners Guide**
  - Measuring Performance to Build a Case
- **Application Exercise**
The Briotix Approach

Speed

Science

Synergy
The Evolution of Work
The Tapestry of Occupation

Work, occupation is an expression of component parts working together to form an organization in pursuit of product realization.
A Brief History of Occupational Roles

HISTORIC
Craftsman. Self-employed. Home based. High task autonomy, low demand.

INDUSTRIAL
Low skilled laborer. Employed. Factory / office based. Low task autonomy, low cognitive demand.

MODERN

DIGITAL
Highly skilled ‘free-agent’ knowledge worker. Info / team based. Moderate to high task autonomy, high cognitive demand.

Our occupational ‘identities’ have changed.
Evolution of Industry (Rates)

Our physical activities & environments have changed.
The level of cognitive demand correlates with learning taxonomies. Analogous thinking or taking the hypothetical seriously (e.g. represents the top category of thinking).

In 1900 only 3% of people held cognitively demanding jobs. Today, 100 years later, 35% of people hold high cognitively demanding jobs.

Our type & manner of thinking has changed.
Today in the digital knowledge era, more than ever, psychosocial factors - including job demand, locus of control, levels of peer and supervisor support play a huge role in determining or attenuating job strain.

Person ‘sovereignty’ also significantly impact the perception of stress. Factors include ability to control privacy, noise, visual load, temperature, proximity to others, and maintain task control.
At the Intersection of ‘Place’
Consider this... the workplace is not fixed, binary, or absolute.

It is estimated that 25 Million Americans work from home at least some of the time (e.g. at least one day a month).

It is estimated that 64 Million Americans hold jobs compatible with telework.

79% of the US workforce says they would like to work from home - at least part of the time.

Source - Global Workplace Analytics
Experimentation with ‘Place’

0 – 1700’s
Middle ages, craftsmen worked at home

18th – 19th Century
Industrial revolution concentrated us in offices & factories

1973
First telecommuting test began with mainframes in Insurance

1979
Flexiwork pushed as a result of the OPEC oil embargo

1990
Clean air act required companies reduce commute time by 25%

1994
AT&T launched Telework America

2009
Hurricane Katrina drove heavy remote working within government

2009
The great recession sees telecommuting rates continue to climb despite job loss
‘Virtual reality’ is here. You need compelling answers and a point-of-view for these questions.

What supportive equipment do you provide for an employee’s home or virtual office?

Where would your employees say they work? The office, their home, the subway, a car? How are you servicing these environments?

Do your office collaborative or non-traditional spaces factor ergonomics into their design?
Does your ergonomics & design program consider and address mixed-modality work? Trainings, risk assessments, interventions, workstation design, etc. must consider this new virtual reality.
Patterns of Place Usage

BRIOTIX - OCCUPANCY STANDARD

HIGHLY MOBILE
Office Collaborator

DESK ASSIGNED

REMOTE / MOBILE

DESK TETHERED
What is “Productivity”?

**TASK PERFORMANCE**
- Directly observable.
- Objective measures possible.
- Lower relative value in a modern knowledge economy.
- Short-term measurement period required.

**KNOWLEDGE PERFORMANCE**
- Only indirectly observable.
- Subjective measures possible.
- High relative value in a modern knowledge economy.
- Long-term measurement period or supplemental data inputs required.
The Measures

### Task Performance
- Task Duration
- Through-Put
- Error Rates
- Rework Cycles
- Duration of Focus
- Through-Put Over Time

### Knowledge Performance
- Creativity
- Creativity Testing
- Statistical Process Control
- Problem Solving Testing
- Innovation
- Ideation
- Employee Engagement
- Lost Time Measures

**Our Initial Focus**
The Impact of PLACE

The Impact of PLACE

Without careful planning, the move to density erodes these gains.
Human Physiology at Work

Employees do not habituate to environmental stressors.

COGNITIVE LOAD: The increased complexity of open plan offices reduce problem solving capacity. Encode Use and Provide Compartmentalization.

NOISE is the #1 cause of distraction, lower productivity, increased stress. Absorb, Block, Cover

SPACE: Density + High Occupancy is perceived as crowding. Establish Head’s Down Focus Spaces.

LIGHTING: Eyes lead the body. Correct Luminescence. Task Lighting
Cognitively demanding jobs require the ability to moderate your work environment to reflect your needs.

Failure to offer supportive solutions will result in employee ‘invention’.
Return on Investment

1. Fixed Height = Rising Costs, OHS Proprietary Analysis. S. Spencer, 2013
2. Vink, Koningsveld, Moelenbroek. Positive outcomes of participatory ergonomics in terms of greater comfort and higher productivity.
3. Lost Productive Work Time Costs From Health Conditions in the United States: Results From the American Productivity Audit
The Future is Now
Highly uniform workstation design does not well accommodate anthropometric extremes or those for whom standing & postural rotation provides symptomatic relief.
Trends in RE Design

The forward-looking en-trend design approach.

Two macro trends heavily inform our forecast of desk demand:
1) Public advocacy for adjustability (media coverage & medical research)
2) The 5 & 10 yr corporate real estate strategic plans amongst our global clientele.

Most telling, virtually all our global clients are budgeting for a MINIMUM 50% height adjustable desk utilization within 3 years.

The majority of our information & media and tech sector clients, meanwhile, are projected to reach 100% penetration within 5 years.

The American Medical Association has adopted a policy encouraging employers to make sitting alternatives available.

Significant funding in being invested in ‘inactivity physiology’ research in the US & the EU.

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Persona Thinking

- A Symbolic or Representative Personal Profile of a Buyer or Influencer
- “Walk a Mile in Your Client’s Shoes”

Core Elements:

- Basic Demographic Elements
- Job Responsibilities
- Work Life
- Challenges
- Desires & Motives
- Comparables
How Do We Use a Persona?

- Empathy
- Understand Motivations
- Focus on Perspectives and Issues
- Improve Communication
- Identify Engagement Options
- Anticipate & Overcome Objections
- Develop Synthesized Use Cases
How Do You Develop a Persona?

- Name & Title
- Profile & Role
- Demographics
- Day-to-Day Goals
- Challenges

What is the narrative?
What are their motivations?
What are their frustrations?
How do they work best?
What is their attention span?
Knowledge Work, Place and Space
A human factors perspective
One practitioner's guide to the workplace of the future

Meg Honan, CPE, MSEHS
Integrating ergonomics into the workplace of the future

- Is it a gap or a chasm?
- Ergonomists need to do more
- Human factors is a critical consideration
- We need to understand space planning
- Collaboration with designers and space planners is critical to success in both disciplines
New WOW…WOF…NWE…ROW

What does it mean?

It is not … another 90’s tech boom tale
– Lack of space planning or strategy marked that era
– Folding tables and chairs
– Crude networks and basic tech tools were prevalent

Early adopters  Current state  Future success
Early Adopters

Drive for Energy and Collaboration increasing

- Smaller sized meetings for exchange of ideas and rapid iterative changes
- Space that promotes a “collision of ideas” more appealing
Generational changes

- Post boomers less comfortable with traditional office or cubes
- Preference for increase choice when it come to work place
- Greater preference and comfort with new work environments
- “Energy” often drives their job and company preference
Density up/Occupancy down

Today @ Genentech

Average utilization of all space types

<table>
<thead>
<tr>
<th>Occupied</th>
<th>Unoccupied</th>
</tr>
</thead>
<tbody>
<tr>
<td>34%</td>
<td>66%</td>
</tr>
</tbody>
</table>

Conference room occupancy

<table>
<thead>
<tr>
<th>Occupied</th>
<th>Unoccupied</th>
</tr>
</thead>
<tbody>
<tr>
<td>46%</td>
<td>54%</td>
</tr>
</tbody>
</table>

Office occupancy

<table>
<thead>
<tr>
<th>Occupied</th>
<th>Unoccupied</th>
</tr>
</thead>
<tbody>
<tr>
<td>30%</td>
<td>70%</td>
</tr>
</tbody>
</table>

Cube occupancy

<table>
<thead>
<tr>
<th>Occupied</th>
<th>Unoccupied</th>
</tr>
</thead>
<tbody>
<tr>
<td>40%</td>
<td>60%</td>
</tr>
</tbody>
</table>

Most Common Group Size

Most Common VC Group Size

Early adopters  Current state  Future success
We work everywhere

Space use is non-traditional as a matter of routine

Distance and time can be bridged by advanced technology and communication tools.
Cost per ft² also drives a need for increase density
   Real estate cost is measured in ft² per employee across portfolio
   Broad implications for minimizing lease space and new builds

Energy costs of more efficiently used space is another real estate saving
   More efficient use of daylight and total volume of space that requires lighting and temperature modulation
New Work Environment (NWE) priorities

Workplace planning

Research

Human Factors Ergonomics

Driver’s

Goals
Workplace planning research...

...Human factors research

Increase focus on space use research, associated use policies and flexible technology infrastructure

Physical and environmental fit/function and work flow systems

HBR October, 2014
New work environment priorities

**Driver’s**

- Need for cross functional, team-based collaborative work environments
- Increased density and practical use of space. Cost and culture
- Less formal, more flexible, creative work environments
- Removal of hierarchical assignments
- Explosion of localized bandwidth, shared technology abilities and personal technology devices

**Workplace planning**

**Human Factors**

- Fitting the work places to the person and population
- Environmental Ergonomics – Impact of temperature, glare and noise
- need for focused work and the impact of distraction on productivity.
- More postural risk factors are observed in shared and fixed work environments
- Also driven by explosion of personal mobile technology driving more agile behavior
Both groups have common goals:

1. Increased productivity and workplace effectiveness and customer satisfaction.
2. Supporting company to meet business objectives
Genentech’s experience with new work environments

- Ergonomics department with a mature program
- New workplace planning director
- Both groups have common goals of increased productivity and workplace effectiveness and customer satisfaction
- Measurement of those goals is not well defined by either group. Currently defined by perception and judgment…or…
- Injury and discomfort metrics as a data points are lagging indicators of success or failure of new work environments
- Limited shared vocabulary and true understanding best means of collaboration between groups
Ergonomics @ Genentech: a very traditional office environment

Goal is to manage risk instead of consequences of risk

Architects & workplace planners

Initial design

Architectural and furniture standards
SITE SERVICES: EXPLORING HOW WE WORK TO ACHIEVE OUR DESIRED BUSINESS OUTCOMES

HOW WE WORK TODAY

- Limited time to recharge or reflect
- Limited places for focused work
- Too many emails
- Too many scheduled meetings

Leverage technology to...

- Interact MORE INFORMALLY less formally
- Accomplish MORE INDIVIDUAL WORK
- Work effectively ACROSS TIME + DISTANCE
- Interact across groups to BREAK DOWN SILOS

HOW WE NEED TO WORK

DESIRED BUSINESS OUTCOMES

- Live our vision of "forward thinking"
- Enable innovation and a great place to work while containing cost
- Lead the way in enabling collaboration and breaking down silos
- Build high performing, customer-focused teams across Site Services
Workplace planning methods

- Large focus on prototyping and gathering lessons learned
- Workshops, focus groups, surveys/questionnaires
- Limited human factors on early surveys
Site Services – B83-6

- Move-in date: January 27, 2014
- Total number of seats: 67
  - Work seats: 48
  - Collaborative seats: 19
- Total number of participants: ~60
- Subset of Site Services participant groups:
## Mobile work and human factors mismatches (obvious)

<table>
<thead>
<tr>
<th>Unassigned work environment</th>
<th>Ergonomic considerations to include</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common use of fixed desk height</td>
<td>Promote adjustability to fit the widest range of user</td>
</tr>
<tr>
<td>Suboptimal chair choice can limit optimizing fit (85% is goal)</td>
<td>Define criteria for chair choice</td>
</tr>
<tr>
<td>Mobile devices used all promote cumulative neck flexion &gt;25° (laptop, tablet and smartphone)</td>
<td>Promote plug in monitor (surface depth can limit optimal viewing distance)</td>
</tr>
<tr>
<td>Mismatch of keyboard position with optimal height and reach</td>
<td>Use external keyboard and mouse</td>
</tr>
<tr>
<td>Environmental factors including temperature, glare, noise and distraction issues can impact comfort and performance</td>
<td>• Incorporate lighting choices and workstation layout to minimize glare</td>
</tr>
<tr>
<td></td>
<td>• Acoustic management to minimize noise and distraction</td>
</tr>
<tr>
<td></td>
<td>• Flexible temp control, etc.</td>
</tr>
<tr>
<td>Unassigned work environment</td>
<td>Ergonomic considerations to include</td>
</tr>
<tr>
<td>-----------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Many do not adjust their adjustable tables and chairs to fit them</td>
<td>Behavior changes is the hardest to make stick</td>
</tr>
<tr>
<td>More adjustability leaves more options for at risk postures</td>
<td>Unused or improperly used adjustments, can leave end users at more risk for a larger part of the day</td>
</tr>
<tr>
<td>Many don’t take the time to plug-in to monitors in touch down spaces</td>
<td>Need to integrate adjustability and “natural” behavior into improved ergonomic work practices</td>
</tr>
</tbody>
</table>
Summary

• Strong learning curve for ergonomics leadership (me) and team

• Simplified ergonomic design guidelines and selection criteria for furniture and accessories

• Integration of ergonomics improved over time

• **Partner early, partner often. Collaboration is key**

• Lessons learned regarding the “human factor”
  o We do not naturally adjust of adjustable work stations
  o Focus group do not capture observed ergonomics risks (Secondary task?)

• Both better partners as we move forward

• With time and a strong commitment, much better alignment and success for Genentech
Bringing It Into Focus - Application Exercise
e-Acme Corporation

Leading engineers of world-class, space-age widgets

Seeking experts in workplace performance to keep their competitive edge & support their new corporate headquarters.
The new building will house...

Product Engineering
Quality Control
Finance
Executive
Product Marketing
Sales
Supply Chain Management

Across 4 buildings
Your Tool Kit

- Space Use Survey
- Tool and Furniture Guidelines
- Information Process Flow Analysis
- A Persona-Based WIIFM Pitch
Secret Sauce - SIPOC

Who provides it?
What do they provide?
What do you do with it then?
*(Drill down into the how, where, and why if needed)*
What do you produce?
Who receives it?

**AND REPEAT**

Keep it neutral, avoid making judgments or value determinations. Empathize with the pain points.

Don’t be afraid to work backwards CIPOS or from the middle outwards.
**Guideline for furniture selection in a new work environment (NWE)**

**Principle Concept:** Design of furniture and workspaces should not force awkward or unsupported postures.

<table>
<thead>
<tr>
<th>Furniture</th>
<th>Features</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task chairs</td>
<td>Critical features:</td>
<td>Support use of</td>
</tr>
<tr>
<td></td>
<td>- Sliding seat pan (detail)</td>
<td>- Smartphones</td>
</tr>
<tr>
<td></td>
<td>- Armrest with height, width, length adjustments</td>
<td>- Tablets</td>
</tr>
<tr>
<td></td>
<td>- Option to lock in upright</td>
<td>- Laptops</td>
</tr>
<tr>
<td></td>
<td>- Height range</td>
<td></td>
</tr>
<tr>
<td>Sit to stand tables</td>
<td>Specify an extended surface height range of 23 to 48” to support both</td>
<td>Well suited for:</td>
</tr>
<tr>
<td></td>
<td>sitting and standing work and</td>
<td>- unassigned Individual workstations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Drop in spaces</td>
</tr>
<tr>
<td>Monitor Arms</td>
<td>Maximize vertical height range</td>
<td>Well suited for:</td>
</tr>
<tr>
<td></td>
<td>(12-13” is best available at the present time)</td>
<td>- in unassigned and shared spaces</td>
</tr>
<tr>
<td></td>
<td>- Monitor range should lower to desk level for bifocal uses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Minimize fold flat distance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3-4” is best available at the present time)</td>
<td></td>
</tr>
</tbody>
</table>
| Fixed standing table/surface | Height: 38” minimum and 40” maximum floor to surface height  
Examples include: laptop bar, conference room table  
Clearance: Ensure adequate leg clearance (18”) and foot clearance (4”) under front edge  
Consider providing a foot rail to support varied postures for the back and legs  
Table edge: Avoid sharp or squared edges. Specify rounded (1/4” radius preferred) and eased edges on fixed height tables | Guideline for furniture selection (continued) |
| Fixed sitting table/surface | 28.5” floor to surface height  
(conventional 30” height too tall to mobile device use)  
Provide height adjustable footrest for smaller users if duration of work >1 hour | Support use of  
• Smartphones  
• Tablets  
• Laptops |
| Work lounge seating | Firmness of seat and back cushions  
If no backrest then support upper torso by providing a surface in front to lean onto  
Seat depth < 18”  
Seat height >16” and <18”  
Armrest should be soft and wide for comfortable support when holding tablet or other device  
Support pillows are not practical in a work setting but can be used for lumbar or to support arms for mobile device use | All of these elements should work together to allow people interact with technology effectively while sitting |
## Guideline for selection of equipment to support mobile technology

<table>
<thead>
<tr>
<th>Technology</th>
<th>Toolkit</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laptop</td>
<td><strong>Laptop toolkit #1</strong></td>
<td>Short-term use (≤2hrs.) Location</td>
</tr>
<tr>
<td></td>
<td>• External travel mouse (avoid very narrow options)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Laptop wedge</td>
<td>• Conference room/meeting</td>
</tr>
<tr>
<td></td>
<td>• Mini-wedge</td>
<td></td>
</tr>
<tr>
<td>Laptop</td>
<td><strong>Laptop toolkit #2</strong></td>
<td>Moderate use (2-4 hours total per day) Location</td>
</tr>
<tr>
<td></td>
<td>• External travel mouse</td>
<td>• War room/long meeting</td>
</tr>
<tr>
<td></td>
<td>• Laptop wedge</td>
<td>• Home</td>
</tr>
<tr>
<td></td>
<td>• Laptop stand with external keyboard and mouse</td>
<td>• Hotel/travel</td>
</tr>
<tr>
<td>Laptop</td>
<td><strong>Laptop toolkit #3</strong></td>
<td>Long-term Use (&gt;4hrs) Locations</td>
</tr>
<tr>
<td></td>
<td>• External monitor (if not possible, a laptop stand)</td>
<td>• Home office</td>
</tr>
<tr>
<td></td>
<td>• External keyboard</td>
<td>• Prolonged work at a remote site</td>
</tr>
<tr>
<td></td>
<td>• External mouse</td>
<td>• Drop in stations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Unassigned or shared work environments</td>
</tr>
<tr>
<td>Tablet</td>
<td>Toolkit #1</td>
<td>Short term use (&lt;1 hour)</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------------------------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td></td>
<td>• Consider a case with incline options (Used to reduce screen glare and improve visual access to the virtual keyboard)</td>
<td>- Meeting notes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- When used to monitor emails and text messages</td>
</tr>
<tr>
<td>Toolkit #2</td>
<td>• Consider use of stand with an external tactile keyboard</td>
<td>Moderate use (&gt; 2 hours total per day)</td>
</tr>
<tr>
<td>Smartphone</td>
<td>Best practices</td>
<td>Uses</td>
</tr>
<tr>
<td></td>
<td>• Use Siri or other voice to text features</td>
<td>- Primary tool for meetings</td>
</tr>
<tr>
<td></td>
<td>• Write short messages</td>
<td>- Task that require considerable keying (such as email)</td>
</tr>
<tr>
<td></td>
<td>• Use swipe feature on Android devices</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Use two hands</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Limit continuous use to &lt; 5 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Use a soft grip</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Uses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Checking and responding to emails briefly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Internet “snacking”</td>
<td></td>
</tr>
</tbody>
</table>

**Important principle**

Use the right tool for the right task. Smartphone (and tablets) are handy but an inefficient and physically stressful approach for lengthy communication using a virtual keyboard.
How Do We Use a Persona?

- Empathy
- Understand Motivations
- Focus on Perspectives and Issues
- Improve Communication
- Identify Engagement Options
- Anticipate & Overcome Objections
- Develop Synthesized Use Cases
Meg Honan

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- honan.meg@gene.com
- BCPE
- HFES annual conference in October
- OERC member

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