

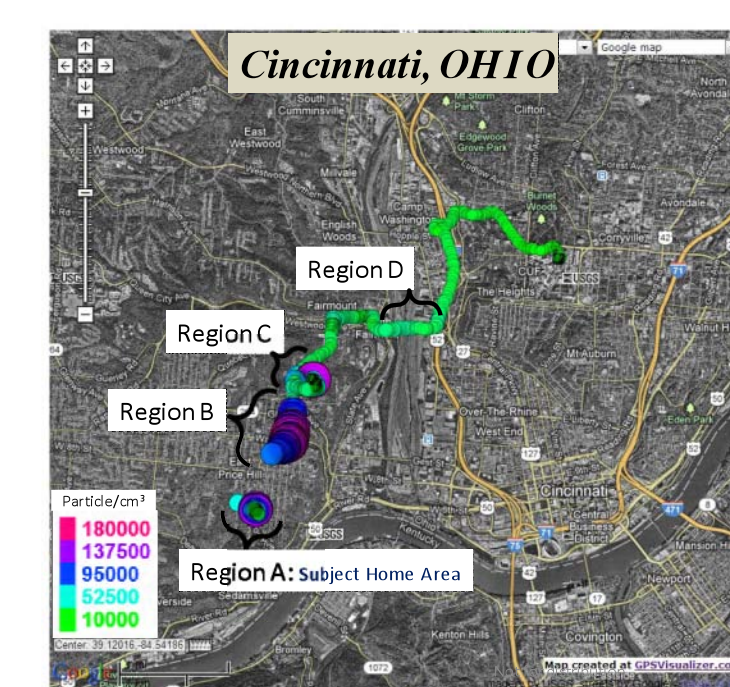
# Medication Management The Opportunity

**mMed™ Patent Portfolio**  
for mobile medication management

## Vital Signs and Treatment Marker Monitors

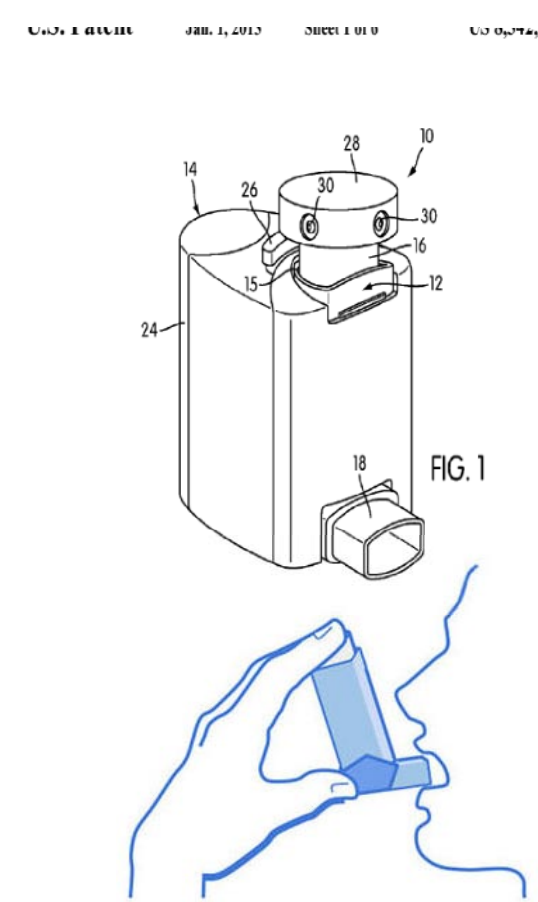


## Spatial & Temporal Exposure Assessments



Map shows exposure to fine particulate matter.

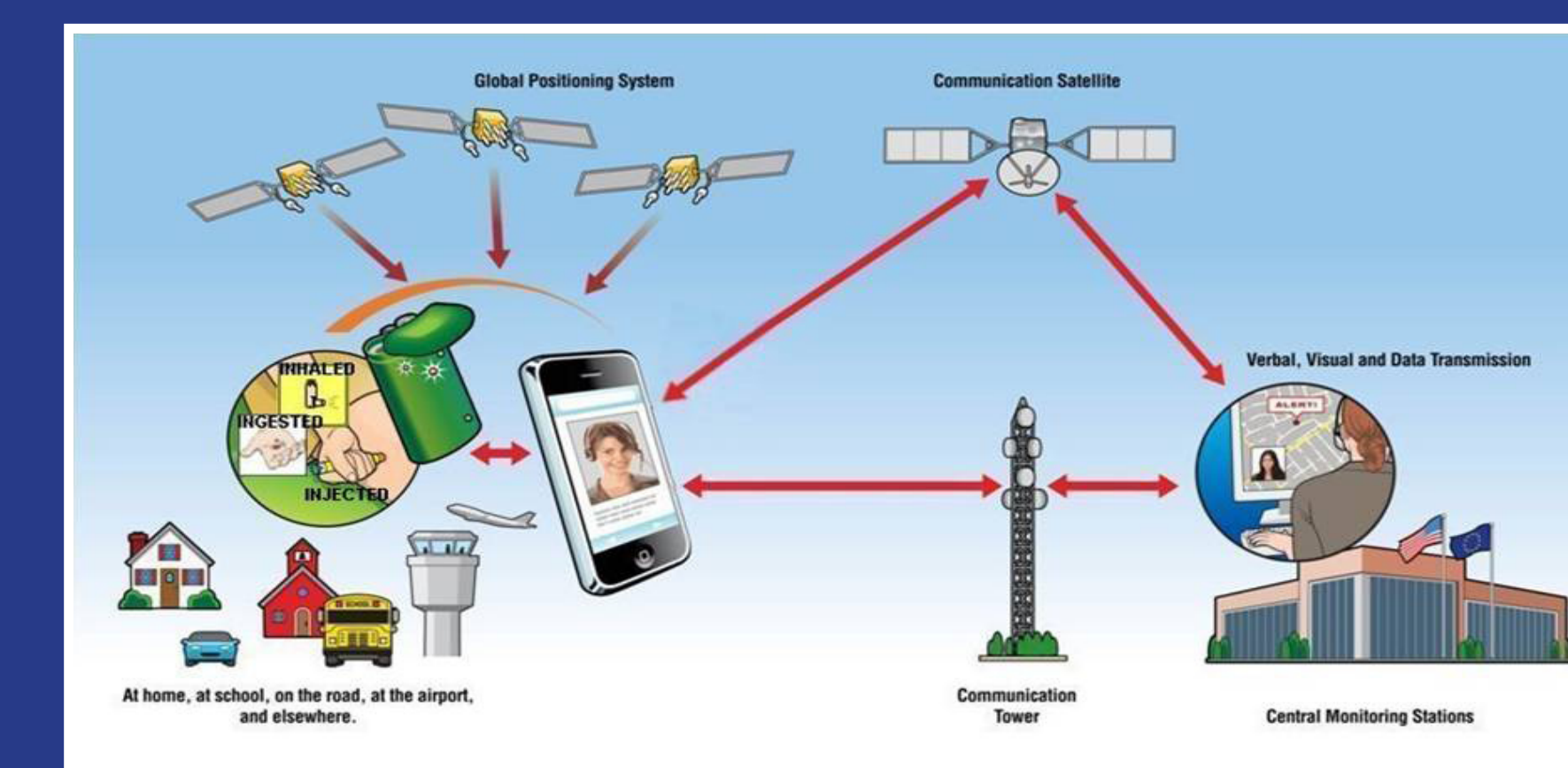
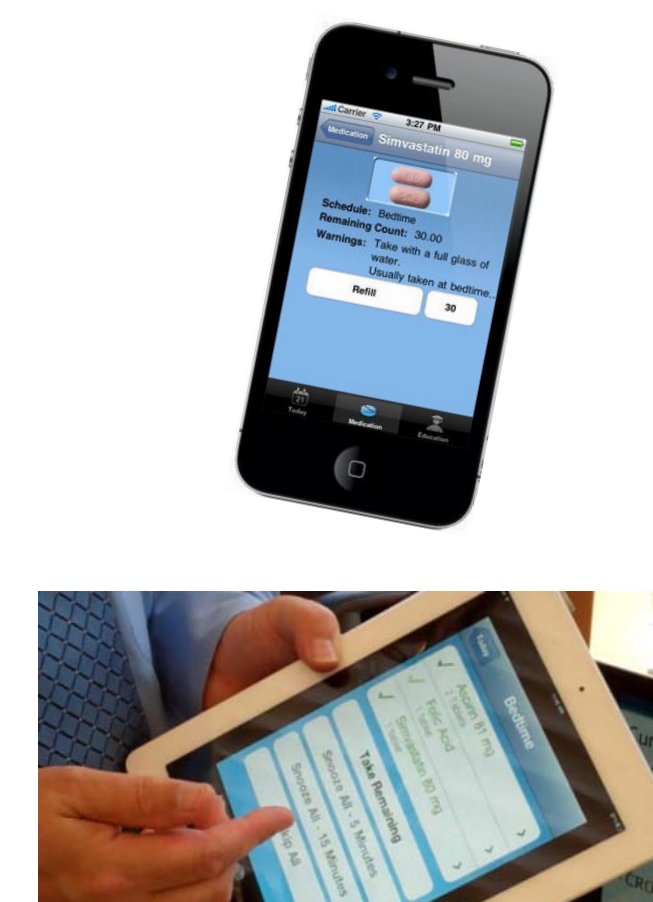
## Inhalers



## Tablets or Capsules



## Related information



**Medication management devices based on the mMed patent portfolio**

1 These systems allow patients to be active and mobile while communicating vital signs and therapeutic markers, and they facilitate support from caregivers and healthcare professionals.

2 More and more companies in the business of managing and achieving compliance are working to develop smarter devices and systems.

3 New Directions Technology Consulting, LLC, is the exclusive market developer for the mMed patents.

## Medication Adherence: A Recognized Financial Opportunity



The \$290B/year healthcare cost of medication non-adherence is avoidable. The financial opportunity is to reduce this cost, as well as to recover lost productivity costs.

## Therapeutic Opportunities

Improved health is often a direct function of following a medication protocol. Patients or their caregivers, not healthcare professionals, are in control of medications at the true point of care: wherever the patient doses. Related service possibilities extend well beyond adherence.

## Needs

There are needs for real-time, bidirectional, mobile monitoring of treatment marker AND medication management to improve outcomes for patients "in the wild."

## Enablers

Entrepreneurs and intrapreneurs have created smartphones; apps; ruggedized, miniaturized sensors; low-energy power sources; AIDC-RFID and 2D symbology; digitized healthcare systems/EMRs, PMRs; fancy pill boxes; reminders; big data capabilities; and myriad off-the-shelf components and combinations of these. The regulations and standards are largely in place.

These enabling systems are the basis for communication of vital signs and other therapeutic markers. These devices often use smartphones or other devices with short- and long-range communications capabilities.

## Industry

- 50+ companies in the U.S. alone with personal dispensers for oral medications, most of which are working to become "smart"
- Thousands of medication diary apps
- 20+ self-injection manufacturers

## Unmet Need

Technology enabled, end-to-end, bidirectional, mobile, real-time, monitored therapeutic markers and medication dispenser systems together provide patients and caregivers tools to help take actions required to make and keep patients well—and to document outcomes. When practitioners know patients are compliant with their dosing regimens, the therapeutic markers, including vital signs are better understood.

## Adherence Opportunities Beyond Better Outcomes

Additional business opportunities lie in providing related services for patients, pharma, providers and payers.

## Broader Capabilities

- Technology-enabled mobile systems not only can provide medication "reminder" alerts, but also can:
- Relate availability, quantity of the medication
  - Alert re: medication condition problems (e.g., premature degradation, breakage)
  - Verify dosing
  - Instruct for proper use and disposal
  - Prompt to initiate replenishment process
  - Assist in real-time diagnosis, determination of treatment
  - Alert re: drug interaction, adverse drug reactions, abuse
  - Integrate existing and current data into medical records

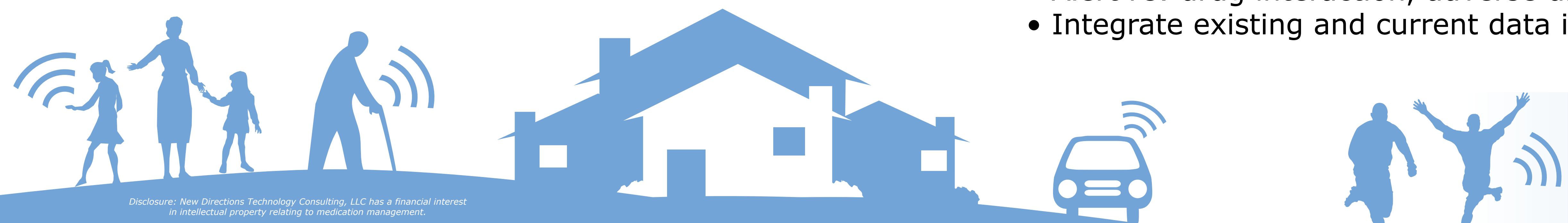
## The Vision

A mobile treatment system, suitable for all dosage forms and regimens, using automated identity and data capture (AIDC), and featuring:

- Combinations with other apps
- Sensor-gathered and self-reported data
- Real-time communication about therapeutic markers, symptoms, side effects, completed activities, missed tasks, adverse reactions, polypharmacy/drug interaction, patients' emotional states, lifestyle occurrences (e.g., exercise, dietary habits), and condition of medication
- Multidirectional information exchanges between patients, providers, caregivers and other stakeholders
- Treatment reinforced through customized messaging, customized response
- Dose response or gesture-based dispensing verification
- Incentives, as appropriate
- Modifiable protocols and schedules that can be fixed, randomized or event triggered at point of care or remotely
- Geolocation for environmental data, treatment site selection
- Educational programs scheduled, shared with professional(s), family caregivers; tested within the system
- Surveys with conditional responses

## Patient Benefits

- Having tools that help patients make/keep themselves well
- Reduced confusion about their meds
- Remaining active and mobile
- Enhanced potential for emergency response
- Fewer outpatient/inpatient visits, co-pays, other out-of-pocket expenses
- Less absenteeism; increased worker productivity
- Reduced dependency on caregivers



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Disclosure: New Directions Technology Consulting, LLC has a financial interest in intellectual property relating to medication management.